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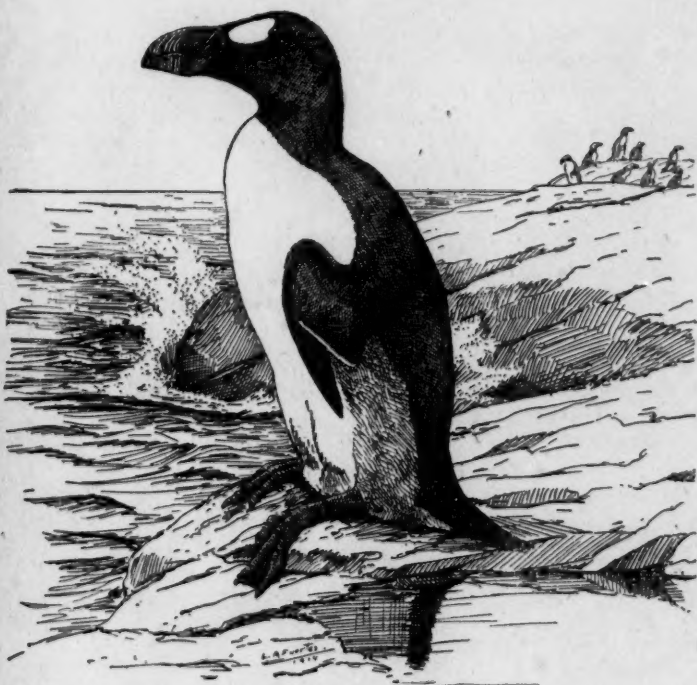
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EDITOR

WITMER STONE



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CONTENTS OF VOLUME XXXVI.

NUMBER I.

	PAGE.
THE BIRDS OF THE RED DEER RIVER, ALBERTA. By P. A. Taverner. (Plates I-IV.)	1
THE HAWAIIAN ELEPAIO. By Vaughan MacCaughey	22
FURTHER NOTES ON NEW BRUNSWICK BIRDS. By P. B. Philipp and B. S. Bowdish. (Plates V-VI.)	36
WINTER BIRDS OF EAST GOOSE CREEK, FLORIDA. By R. W. Williams	45
NOTES ON THE SUMMER BIRDS OF THE UPPER YUKON REGION, ALASKA. By Eliot Blackwelder	57
NOTES ON SOME BIRDS OF THE OKANAGAN VALLEY, BRITISH COLUMBIA. By J. A. Munro	64
DESCRIPTION OF A NEW SUBSPECIES OF <i>PIRANGA HEPATICA</i> SWAINSON. By Harry C. Oberholser	74
NOTES ON NORTH AMERICAN BIRDS. VII. By Harry C. Oberholser	81
DESCRIPTION OF A NEW SEASIDE SPARROW FROM FLORIDA. By Arthur H. Howell	86
DESCRIPTIONS OF NEW BIRDS FROM SOUTH AMERICA. By Charles B. Cory	88
THIRTY-SIXTH STATED MEETING OF THE AMERICAN ORNITHOLOGISTS' UNION. By T. S. Palmer	90

GENERAL NOTES.

Further Notes on the "Fishy" Flavor of Birds, 100; Egrets (*Herodias egretta*) in Northern New Jersey, 101; Brooding Habit of the American Coot, 102; Stilt Sandpiper (*Micropalama himantopus*) in Wyoming, 102; Notes on Migratory *Anatinae* and *Limicola* from Western New York, 102; Spring Shore-birds in Connecticut, 104; Killdeer (*Oxyechus vociferus*) Nesting in West Haven, Conn., 105; Mourning Doves Sharing a Robin Roost, 106; Duck Hawks Wintering in the Center of Philadelphia, 108; A Note of the Long-eared Owl (*Asio wilsonianus*), 109; The Short-eared Owl in Massachusetts in Summer, 109; On *Brologeris ferrugineifrons* Lawrence, 110; Arctic Three-toed Woodpecker (*Picoides arcticus*) at Belmont, Mass., 110; The Song of the Blue Jay, 111; The Aesthetic Sense in Birds as Illustrated in the Crow, 112; Proper Name of the Tree Sparrow, 114; The Rose-breasted Grosbeak in Connecticut in November, 114; Zamelodia versus Hedymeles, 115; Rough-winged Swallow, Unusual Nesting Sites, 115; Late Nesting of the Red-eyed Vireo in Detroit, Mich., 115; Local Decrease of Warblers in 1917, 116; The Name "erythrogaster," and Others, 116; Waterton on Bird Song, 118; Correction, 118.

RECENT LITERATURE.

Beebe's 'Monograph of the Pheasants,' 119; Leo Miller's 'In the Wilds of South America,' 125; Van Oort's Birds of the Netherlands, 127; Mathews' 'The Birds of Australia,' 129; Beebe's 'Jungle Peace,' 130; Riley on a Collection of Birds from Northeastern Siberia, 131;

Shufeldt on the Skeleton of the Kea Parrot, 131; Murphy's Photographs of South Georgia Birds, 132; Taverner's Recent Papers on Canadian Birds, 132; 'Aves' in the Zoological Record, 133; Proceedings of the Linnæan Society of New York, 133; Annual Report of the National Association of Audubon Societies, 134; Zimmer on Rare Birds from Luzon and Mindoro, 135; Recent Papers by Wetmore, 135; Five Contributions to Economic Ornithology by Collinge, 136; Chapman's 'Our Winter Birds,' 137; The Ornithological Journals, 138; Ornithological Articles in Other Journals, 144; Publications Received, 144.

CORRESPONDENCE.

Maggot Infested Birds, 147; Evolution of Bird Song, 149; Australia's Effort to Save her Bird Fauna, 151.

NOTES AND NEWS.

Changes in the A. O. U. Check-List, 152; Obituary: Walter Freeman McMahon, 153; Douglas Clifford Mabbott, 153; Prof. David Ernest Lantz, 154; Check Lists, 155; Paintings of Extinct Birds, 157; Matthews Collection of Australian Birds, 157; Account of the A. O. U., 157; Retirement of W. Ogilvie-Grant, 157; The Ottawa Naturalist, 157; The Chicago Ornithological Society, 158; Paintings Illustrating Camouflage, 158; A Supplement to Townsend's 'Birds of Essex County' Mass., 158; Alleged Occurrence of Passenger Pigeons, 158; Called to the Colors, 158.

NUMBER II.

	PAGE.
MRS. OLIVE THORNE MILLER. By Florence Merriam Bailey. (Plate VII.)	163
AN EXPERIENCE WITH HORNED GREBES (<i>Colymbus auritus</i>). By Alexander D. DuBois. (Plates VIII-X.)	170
HISTORICAL NOTES ON HARRIS'S SPARROW (<i>Zonotrichia querula</i>). By Harry Harris	180
NOTES ON THE STRUCTURE OF THE PALATE IN ICTERIDÆ. By Alexander Wetmore	190
THE CROW IN COLORADO. By W. H. Bergtold	198
WINTER ROBINS IN NOVA SCOTIA. By Harrison F. Lewis	205
REMARKS ON BEEBE'S 'TROPICAL WILD LIFE.' By Thomas E. Penard	217
PROBLEMS SUGGESTED BY NESTS OF WARBLERS OF THE GENUS DENDROICA. By John Treadwell Nichols	225
ON THE POPULAR NAMES OF BIRDS. By Ernest Thompson Seton	229
THE REALITY OF SPECIES. By Leverett Mills Loomis	235
GEOGRAPHICAL VARIATION IN THE BLACK-THROATED LOONS. By A. C. Bent	238
REASONS FOR DISCARDING A PROPOSED RACE OF THE GLAUCOUS GULL (<i>Larus hyperboreus</i>). By Jonathan Dwight, M. D.	242

THE BIRDS OF THE RED DEER RIVER, ALBERTA. By P. A. Taverner.	248
FOURTH ANNUAL LIST OF PROPOSED CHANGES IN THE A. O. U. CHECK-LIST OF NORTH AMERICAN BIRDS. By Harry C. Oberholser	266
NEW FORMS OF SOUTH AMERICAN BIRDS AND PROPOSED NEW SUB- GENERA. By Charles B. Cory	273

GENERAL NOTES.

Procellariidæ versus Hydrobatidæ, 276; Long-tailed Jaeger in Indiana, 276; *Larus canus brachyrhynchus* in Wyoming, 276; *Polysticta* Eyton versus *Stellaris* Bonaparte, 277; Further Record of the European Widgeon at Madison, Wis., 277; A Late Record for *Rallus elegans* for Maine, 277; The Proper Name of the Ruff, 278; *Heteractitis* versus *Heteroscelus*, 278; The Status of *Charadrius rubricollis* Gmelin, 279; A Self-tamed Ruffed Grouse, 279; Unusual Contents of a Mourning Dove's Nest, 281; Mourning Dove Wintering in Vermont, 282; *Thrasoetos* versus *Harpia*, 282; The Status of the Generic Name *Archibuteo*, 282; Harris's Hawk (*Parabuteo unicinctus harrisi*) in Kansas, 283; The Proper Name for the Texas Barred Owl, 283; Concerning a Note of the Long-eared Owl, 283; The Short-eared Owl Breeding on Nantucket, 284; Early Occurrence of the Snowy Owl and the Pine Grosbeak in Monroe County, New York, 285; The Deep Plantar Tendons in the Puff-birds, Jacamars and their Allies, 285; The Status of the Genus *Hypocentor* Cabanis, 286; A Correction Involving Some Juncos, 287; An Additional Record of *Ammodramus savannarum bimaculatus* in Eastern Washington, 287; The Dickcissel in New Hampshire, 288; Early Nesting of the Loggerhead Shrike, 288; A Note on the Decrease of the Carolina Wren near Washington, D. C., 289; The Affinities of *Chamaethlypis*, 290; Blue-winged Warbler Feeding a Young Field Sparrow, 291; The Blue-winged Warbler near Boston, 292; Nashville Warbler (*Vermivora ruficapilla*) in New York in Winter, 293; Four Rare Birds in Sussex County, New Jersey, 293; Notes from a Connecticut Pine Swamp, 293; The Name *cyrtrogaster*, 294; Constant Difference in Relative Proportions of Parts as a Specific Character, 295; "Off" Flavors of Wildfowl, 296.

RECENT LITERATURE.

'The Game Birds of California,' 297; Mathews' 'The Birds of Australia,' 299; De Fenis on Bird Song in its Relation to Music, 300; Dwight on a New Gull, 301; McAtee on the Food Habits of the Mallard Ducks, 301; Stone on Birds of the Canal Zone, 302; Shufeldt on the Young Hoatzin, 302; Riley on Celebes Birds, 302; Oberholser's 'Mutanda Ornithologica V,' 303; Miller's 'Birds of Lewiston-Auburn and Vicinity,' 303; Recent Papers by Bangs, 304; Economic Ornithology in Recent Entomological Publications, 304; The Ornithological Journals, 307; Ornithological Articles in Other Journals, 312; Publications Received, 314.

CORRESPONDENCE.

Identifications (Characters vs. Geography), 316.

NOTES AND NEWS.

Obituary: Frederick DuCane Godman, 319; Robert Day Hoyt, 319; The Mailliard Collection, 320; Recent Expeditions, 321; The Flemming Collection, 321; Rare Birds in the Philadelphia Zoo, 321; Meeting of the R. A. O. U., 322; U. S. National Museum Collection, 322; A. O. U. Check-List, 322; New National Parks, 322; Geographic Distribution of A. O. U. Membership, 323; The Migratory Bird Law, 323; The Delaware Valley Ornithological Club, 323; Common Names of Birds, 324; Birds of Pennsylvania, New Jersey and Delaware, 324.

NUMBER III.

	PAGE.
SOME NOTES ON THE DRUMMING OF THE RUFFED GROUSE. By H. E. Tuttle. (Plate XI.)	325
"THE SINGING TREE," OR HOW NEAR TO THE NEST DO THE MALE BIRDS SING? By H. Mousley	339
THE EARLY HISTORY OF A DUCK HAWK. By Viola F. Richards. (Plates XII-XIII.)	349
A COLONY OF CAPE COD PIPING PLOVER. By C. A. Robbins	351
BLACK DUCK NESTING IN BOSTON PUBLIC GARDEN. By Horace W. Wright	355
THREE INTERESTING GREAT HORNED OWLS FROM NEW ENGLAND. By Glover M. Allen	367
VARIATION IN THE GALAPAGOS ALBATROSS. By Leverett Mills Loomis. (Plates XIV-XVI.)	370
AUDUBON'S BIBLIOGRAPHY. By Francis H. Herrick	372
SOME SUMMER BIRDS OF LIBERTY COUNTY, GEORGIA. By W. J. Erichsen	380
A THREE MONTHS' LIST OF THE BIRDS OF PINELLAS COUNTY, FLORIDA. By Major Clifford H. Pangburn	393
NOTES ON NORTH AMERICAN BIRDS. VIII. By Harry C. Oberholser	406
THE GEOGRAPHIC RACES OF <i>Hedymeles melanocephalus</i> SWAINSON. By Harry C. Oberholser	408

GENERAL NOTES.

The Generic Name of the Gannets, 417; *Polysticta* versus *Stellaria*, 418; *Megalestris* versus *Catharacta*, 418; Destructive Invasion by an Australian Rail, 418; *Sarcidiornis sylvicola* in Venezuela, 419; Occurrence of the Red Phalarope in Pennsylvania, 419; The Status of the Genus *Archibuteo* Brehm, 420; Golden Eagle at East Moriches, N. Y., 421; Arctic Three-toed Woodpecker at Southampton, Mass., 421; Blue Jay again in Jefferson Co., Colorado, 422; Song of the Canada Jay, 422; Evening Grosbeak in New Jersey, 423; The Pine Grosbeak (*Pinicola enucleator leucura*) in Northwestern New Jersey, 423; Early Occurrence of the Red-breasted Nuthatch in New Jersey, 423; The Range of the Short-tailed Mountain Chickadee (*Penthestes gambeli abbreviatus* Grinnell), 424; Note on Audubon's Labrador Trip, 424; Destruction of Sea Birds in Labrador, 427; Specific Names in the Nominative Case, 427; Editions of Baird, Cassin and Lawrence's 'Birds of North America,' 428; Observations on the Shifting Range, Migration and Economic Value of the Bobolink, 430.

RECENT LITERATURE.

'A Practical Handbook of British Birds,' 432; Harris's 'Birds of the Kansas City Region,' 433; Baileys' 'Wild Animals of Glacier National Park,' 434; Moseley's 'Trees, Stars and Birds,' 434; Miss Ball's 'A Year with the Birds,' 435; Gilmore's 'Birds of Field, Forest and Park,' 436; Stephens on the Birds of San Diego County, California, 437; Swarth on New Subspecies of *Passerella iliaca*, 437; Annual Report of the State Ornithologist of Massachusetts, 438; Noble on the Birds of Newfoundland, 438; Chubb on South American Birds, 438; The Ornithological Journals, 439; Ornithological Articles in Other Journals, 442; Publications Received, 444.

CORRESPONDENCE.

Further Note on Identifications (Characters versus Geography), 446.

NOTES AND NEWS.

Obituary: Dr. Louis Brazil, 449; Frederick Bridgman McKechnie, 449; Organization of the American Society of Mammalogists, 451; Gaspe Bird Reserves in Quebec Province, 451; Correction on Townsend's 'Birds of Essex County,' 451; Birds in Museums of Warsaw, 451; New Species of African Birds, 452; New Members of B. O. U., 452; Memorial to Salvin and Godman, 452; Oölogical Museums in California, 452; 'American Museum Journal,' 453; 'The Passenger Pigeon in Pennsylvania,' 453; Thirty-seventh Stated Meeting of the A. O. U., 453.

NUMBER IV.

	PAGE.
NOTES ON A NEW SUBSPECIES OF BLUE-WINGED TEAL. By <i>Fred. H. Kennard</i> . (Plate XVII)	455
THE SYSTEMATIC POSITION OF THE RING-NECKED DUCK. By <i>N. Hollister</i>	460
JACOB POST GIRAUD, JR., AND HIS WORKS. By <i>Wilmer Stone</i> . (Plate XVIII)	464
FURTHER NOTES AND OBSERVATIONS ON THE BIRDS OF HATLEY, STANSTEAD COUNTY, QUEBEC, 1918. By <i>H. Mousley</i>	472
DICHROMATISM IN THE WEDGE-TAILED SHEARWATER. By <i>Leverett Mills Loomis</i> . (Plate XIX)	487
THE NEST AND EGGS OF WAYNE'S WARBLER (<i>Dendroica virens waynei</i>) TAKEN NEAR MOUNT PLEASANT, S. C. By <i>Arthur T. Wayne</i>	489
A HERONRY ON LAKE CORMORANT, MINNESOTA. By <i>Horace Gunthorp</i>	492
BIRD-LIFE IN SOUTHWESTERN FRANCE. By <i>Thomas D. Burleigh</i>	497
NOTES ON BIRDS OF THE CHICAGO AREA AND ITS IMMEDIATE VICINITY. By <i>C. W. G. Eifrig</i>	513

GEOGRAPHICAL VARIATION IN THE SONG OF THE RUBY-CROWNED KINGLET. By <i>Arelas A. Saunders</i>	525
THE EVOLUTION OF BIRD-SONG. By <i>Francis H. Allen</i>	528
REVISION OF THE GENUS <i>Buthraupis</i> CABANIS. By <i>Thomas E. Penard</i>	536
DESCRIPTIONS OF THREE NEW SOUTH AMERICAN BIRDS. By <i>Charles B. Cory</i>	540
THE RELATIONSHIP OF THE GULLS KNOWN AS <i>Larus fuscus</i> AND <i>Larus affinis</i> . By <i>Jonathan Dwight, M. D.</i> (Plates XX and XXI)	542
FORSTER'S EDITION OF LEVAILLANT'S "OISEAUX D'AFRIQUE." By <i>Charles W. Richmond</i>	546
NOTES ON THE RACES OF <i>Quiscalus quiscula</i> (LINNÆUS). By <i>Harry C. Oberholser</i>	549
NOTES ON NORTH AMERICAN BIRDS. IX. By <i>Harry C. Oberholser</i>	556

GENERAL NOTES.

European Widgeon on Long Island in Winter, 560; Breeding of the Black Duck in Lake Co., Ohio, 560; Ruddy Sheldrake on the Atlantic Coast, 561; *Exanthemops* Elliot an Excellent Genus, 562; Notes on the Structure of *Anseranas semipalmata*, 562; *Sarkidiornis sylvicola* in British Guiana, 564; An Overlooked Record of the Trumpeter Swan, 564; Little Blue Heron on Long Island, N. Y., 565; Wood Ibis in Massachusetts, 565; Roseate Spoonbill in Utah, 565; Roseate Spoonbill in North Carolina, 566; Growth of a Young Killdeer (*Oxyechus v. vociferus*), 566; Mating "Song" of the Piping Plover, 566; Upland Plover in New York, 567; Turkey Vulture at Plymouth, Mass., 567; Harris's Hawk in Kansas, 567; Tachytriorchis, the Generic Name for the White-tailed Hawk, 567; A Flight of Broad-winged Hawks and Roughlegs in Lake Co., Ohio, 568; Buteonidae versus Accipitridae, 569; Snowy Owl in Detroit Mich., 569 The Name of the Black Cuckoo, 569; Aerial Evolutions of a Flicker, 570; Two Recent Records of the Horned Lark in Western New York, 570; Abnormal Beak of a Horned Lark (*Otocoris alpestris praticola*), 571; The Raven in Connecticut, 572; Evening Grosbeaks about Beverly Farms, Mass., 572; Evening Grosbeaks at Boonville, N. Y., 573; The Evening Grosbeak on Long Island, N. Y., 573; Evening Grosbeaks again at Lakewood, N. J., 573; Evening Grosbeak (*Hesperiphona v. vespertina*) in Ohio in May, 574; Henslow's Sparrow in New York and Virginia, 574; The Dickcissel in Virginia, 575; *Piranga erythromelas* versus *Piranga olivacea*, 575; The Tanagrine Genus *Procnopis* Cabanis, 576; Early Arrival of the Tree Swallow in Plymouth, 577; Hybrid Warbler in Missouri, 579; The Orange-crowned Warbler on Long Island in April, 579; Peculiar Brooding of the Black-throated Blue Warbler, 579; The Yellow-throated Warbler in Central New York, 580; Nesting of the Myrtle Warbler in Southern Massachusetts, 581; The Cerulean Warbler (*Dendroica cerulea*) in the Catskills, 582; Carolina Wren (*Thryothorus l. ludovicianus*) Nesting in Rhode Island, 583; A Short-billed Marsh Wren Colony in Central New Hampshire, 583; Red-bellied Nuthatch (*Sitta canadensis*) in Alabama, 584; The Blue-gray Gnatcatcher on Cape Cod, 584; Strange Conduct of a Robin, 584; A Three-legged Robin (*Planesticus m. migratorius*), 585; Notes from St. Marks, Fla., 586; Further Notes from Leon Co., Florida, 587; Two Interesting

Additions to the Collection of the Boston Society of Natural History, 589; Bird Notes from Collins, Erie Co., N. Y., 589; Additions to 'The Birds of Liberty County Ga.,' 590; Data on the Age of Birds, 591.

RECENT LITERATURE.

Bent's 'Life Histories of North American Diving Birds,' 593; Ridgway's 'The Birds of North and Middle America, Part VIII,' 595; Witherby's 'A Practical Handbook of British Birds' 597; Roberts on Minnesota Birds, 598; Second Ten Year Index to The Condor, 598; Riley on New Birds from Celebes and Java, 599; Chubb on South American Birds, 599; Lonnberg on Hybrid Gulls, 599; Recent Papers by Oberholser, 600; Captain S. A. White's Explorations in Australia, 600; Bangs and Penard's 'Critical Bird Notes,' 601; Cassinia for 1918, 602; Gladstone's 'Birds and the War,' 602; Mathew's 'The Birds of Australia,' 603; Wetmore on Lead Poisoning in Waterfowl, 605; French's 'The Passenger in Pennsylvania,' 605; Economic Ornithology and Bird Protection, 606; Report of the National Zoological Park, 607; Annual Report of the New York Zoological Society, 607; The Meaning of Natural Control, 608; An Essay on Crows, 609; Two Papers on African Economic Ornithology, 609; Report on the Economic Value of Eight British Birds, 610; The Ornithological Journals, 610; Ornithological Articles in Other Journals, 617.

CORRESPONDENCE.

Permits to Collect Birds for Scientific Purposes in Canada, 621; Captain Thomas Brown's 'Illustrations of the American Ornithology of Wilson and Bonaparte,' 623; Feeding of Grackles 627.

NOTES AND NEWS.

Obituary Notices — William Brewster, 628; M. Namiye, 628; Merrill Willis Blain, 629; Leo Wiley, 629; Indexes to Ornithological Literature — Journals, 630; Where American Ornithologists Rest, 631; Complete Sets of 'The Auk,' 634; The Smithsonian African Expedition, 634; Annual Meeting of the A. O. U., 635.

INDEX	Page 637
ERRATA	" 668
DATES OF ISSUE	" 668
OFFICERS OF THE A. O. U. PAST AND PRESENT	" i
COUNCIL " " " " " "	" ii
CONTENTS	" iii
OFFICERS AND MEMBERS	" xi

ILLUSTRATIONS.

PLATES.

Plate	I. Little Sandhill Creek, Alberta.
"	II. Red Deer River below Nevis, Alberta.
"	III. Camp near Red Deer, Alberta. Nests of Cliff Swallows and Prairie Falcon. Two views.

Plate	IV.	Nest of Ferruginous Rough-leg.	View of Red Deer River.
"	V.	Nest of Cape May Warbler.	Wilson's Snipe on Nest.
"	VI.	Arctic Three-toed Woodpecker and Nest.	Two views.
"	VII.	Mrs. Olive Thorne Miller.	
"	VIII.	Nesting Site of Horned Grebe.	Two views.
"	IX.	Nest of Horned Grebe.	Two views.
"	X.	Horned Grebe on its Nest.	Two views.
"	XI.	Ruffed Grouse Drumming.	
"	XII.	Nest and Nest Site of Duck Hawk.	Two views.
"	XIII.	Young Duck Hawk.	Two views.
"	XIV.	Downy Young of <i>Diomedea irrorata</i> .	
"	XV.	Culmen of <i>Diomedea irrorata</i> .	
"	XVI.	" " " "	
"	XVII.	Heads of Blue-winged Teal.	
"	XVIII.	Jacob Post Giraud.	
"	XIX.	Skins of Wedge-tailed Shearwater.	
"	XX.	Wing tips of <i>Larus fuscus fuscus</i> .	
"	XXI.	Wing tips of <i>Larus fuscus affinis</i> .	

TEXT-CUTS.

Head of <i>Quiscalus quiscula aeneus</i>	Page 191
Head of <i>Icterus gularis yucatanensis</i>	" 195
Charts showing correspondence of occurrence of Robins with temperature variation and snowfall	" 212
Diagram showing variations in measurements of <i>Larus hyperboreus</i>	" 244
Diagram of bill of <i>Larus hyperboreus</i>	" 247
Map of Red Deer Region, Alberta	" 249
Diagram.	

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OBERHOLSER, H. C.

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DWIGHT, JONATHAN

RIDGWAY, ROBERT

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DWIGHT, JONATHAN

FELLOWS, MEMBERS, AND ASSOCIATES OF THE AMERICAN ORNITHOLOGISTS' UNION.

APRIL, 1919.¹

FELLOWS.

	Date of Election.
ALLEN, Dr. J. A., Amer. Mus. Nat. Hist., New York, N. Y.....	Founder
ANTHONY, A. W., Ironside, Ore.....	(1885)1895 ²
BANGS, OUTRAM, Museum Comp. Zoölogy, Cambridge, Mass....	(1884)1901
BARROWS, Prof. W. B., Box 1047, East Lansing, Mich.....	1883
BATCHELDER, CHARLES F., 7 Kirkland St., Cambridge, Mass....	Founder
BEEBE, C. WILLIAM, New York Zoöl. Park, New York, N. Y....	(1897)1912
BENT, ARTHUR CLEVELAND, Taunton, Mass.....	(1889)1909
*BICKNELL, EUGENE P., 30 Pine St., New York, N. Y.....	Founder
BISHOP, Dr. LOUIS B., 356 Orange St., New Haven, Conn.....	(1885)1901
*BREWSTER, WILLIAM, 145 Brattle St., Cambridge, Mass.....	Founder
BROWN, NATHAN CLIFFORD, 218 Middle St., Portland, Me.....	Founder
CHADBOURNE, Dr. ARTHUR P., The Copley-Plaza, Boston, Mass. (1883)	1889
CHAPMAN, Dr. FRANK M., Amer. Mus. Nat. Hist., New York, N. Y.	(1885)1888
*CORY, CHARLES B., Field Museum Nat. Hist., Chicago, Ill.....	Founder
DEANE, RUTHVEN, 112 W. Adams St., Chicago, Ill.....	1883
DUTCHER, WILLIAM, 949 Park Ave., Plainfield, N. J.....	(1883)1886
DWIGHT, Dr. JONATHAN, 134 W. 71st St., New York, N. Y.....	(1883)1886
FISHER, Dr. ALBERT K., Biological Survey, Washington, D. C....	Founder
FISHER, Prof. WALTER K., 1525 Waverley St., Palo Alto, Cal. (1899)	1905
FLEMING, JAMES H., 267 Rusholme Road, Toronto, Ontario...	(1893)1916
FORBUSH, EDWARD H., State House, Boston, Mass.....	(1887)1912
FUERTES, LOUIS A., Cornell Heights, Ithaca, N. Y.....	(1891)1912
GRINNELL, Dr. GEORGE BIRD, 238 E. 15th St., New York, N. Y.....	1883
GRINNELL, Dr. JOSEPH, Mus. Vert. Zoöl., Univ. Cal., Berkeley, Cal.	(1894)1901
JONES, LYNDY, Spear Laboratory, Oberlin, Ohio.....	(1888)1905

¹ Members of the Union, and subscribers to 'The Auk' are requested to promptly notify Dr. JONATHAN DWIGHT, Treasurer, 134 W. 71st St., New York City, of any change of address.

² Dates in parentheses indicate dates of joining the Union.

* Life Fellow.

- LOOMIS, LEVERETT M., Cal. Acad. Sci., San Francisco, Cal. (1883)1892
 LUCAS, Dr. FREDERIC A., Am. Mus. Nat. Hist., New York, N. Y.
 (1888)1892
 MAILLIARD, JOSEPH, 1815 Vallejo St., San Francisco, Cal. (1895)1914
 MCATEE, WALDO LEE, Biological Survey, Washington, D. C. (1903)1914
 *MCGREGOR, RICHARD C., Bureau of Science, Manila, P. I. (1889)1907
 MERRIAM, Dr. C. HART, 1919 16th St., N. W., Washington, D. C. Founder
 MILLER, WALDRON DEWITT, Am. Mus. Nat. Hist., New York, N. Y.
 (1896)1914
 NEHRLING, H., Gotha, Fla. 1883
 NELSON, E. W., Biological Survey, Washington, D. C. 1883
 OBERHOLSER, Dr. HARRY C., Biological Survey, Washington, D. C..
 (1888)1902
 OSGOOD, Dr. WILFRED H., Field Museum Nat. Hist., Chicago, Ill.
 (1893)1905
 *PALMER, Dr. T. S., 1939 Biltmore St., N. W., Washington, D.C. (1888)1901
 PALMER, WILLIAM, U. S. National Museum, Washington, D.C. (1888)1898
 RICHMOND, Dr. CHARLES W., U. S. National Museum, Washington,
 D. C. (1888)1897
 RIDGWAY, Dr. ROBERT, U. S. Nat. Mus., Washington, D. C. Founder
 ROBERTS, Dr. THOMAS S., Univ. of Minnesota, Minneapolis, Minn. 1883
 *SAGE, JOHN H., Portland, Conn. 1883
 SAUNDERS, WILLIAM E., 240 Central Ave., London, Ontario. 1883
 SHUFELDT, Dr. ROBERT W., 3356 18th St., N. W., Washington, D.C. Founder
 STONE, Dr. WITMER, Acad. Nat. Sciences, Philadelphia, Pa. (1885)1892
 SWARTH, HARRY S., Mus. Vert. Zoölogy, Univ. of California, Berke-
 ley, Cal. (1900)1916
 TAVERNER, PERCY A., Victoria Memorial Museum, Ottawa, Canada
 (1902)1917
 TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa. (1890)1916
 WIDMANN, OTTO, 5105 Von Versen Ave., St. Louis, Mo. 1884

RETIRED FELLOWS.

- HENSHAW, HENRY W., The Ontario, Washington, D. C. (1883)1918
 LAWRENCE, NEWBOLD T., Lawrence, N. Y. (1883)1913
 STEJNEGER, Dr. LEONHARD, U. S. Nat. Mus., Washington, D.C. (1883)1911

HONORARY FELLOWS.

- BUTURLIN, SERGIUS ALEXANDROVICH, Wessenberg, Esthonia, Russia
 (1907)1916
 DABBENE, Dr. ROBERTO, Museo Nacional, Buenos Aires, Argentina
 (1916)1918

DUBOIS, Dr. ALPHONSE, Villa Rayon de Soleil, Coxyde sur Mer, Belgium.....	(1884)1911
EVANS, ARTHUR HUMBLE, 9 Harvey Road, Cambridge, England.....	(1899)1917
FÜRBRINGER, Prof. Dr. MAX, University of Heidelberg, Heidelberg, Germany.....	(1891)1916
GADOW, Dr. HANS FRIEDRICH, Cleramendi, Great Shelford, near Cambridge, England.....	(1884)1916
HAAGNER, ALWYN KARL, Zoölogical Gardens, Box 754, Pretoria, Transvaal, South Africa.....	(1916)1918
HARTERT, Dr. ERNST J. O., Zoölogical Museum, Tring, Herts, England.....	(1891)1902
HELLMAYR, Dr. CARL E., Neuhauserstrasse 51.II, Munich, Germany.....	(1903)1911
IHERING, Dr. HERMANN VON, Hansa de Joinville, Estado de Sta. Catarina, Brazil.....	(1902)1911
LÖNNBERG, Dr. A. J. EINAR, Naturhistoriska Riksmuseum, Vetenskapsakademien, Stockholm, Sweden.....	(1916)1918
MÉNÉGAUX, Dr. AUGUSTE, Museum d'Histoire Naturelle, Paris, France.....	(1916)1918
PYCRAFT, WILLIAM PLANE, British Museum (Nat. Hist.) Cromwell Road, London, S. W, 7.....	(1902)1911
REICHENOW, Dr. ANTON, Königl. Mus. für Naturkunde, Invalidenstrasse, 43, Berlin.....	(1884)1891
ROTHSCHILD, Lord LIONEL WALTER, Zoölogical Museum, Tring, Herts, England.....	(1898)1913
SALVADORI, Count TOMMASO, Royal Zoöl. Museum, Turin, Italy.....	1883
SCHALOW, Prof. HERMAN, Hohenzollerndamm 50, Berlin-Grünwald, Germany.....	(1884)1911
SCLATER, Wm. LUTLEY, 10 Sloane Court, Chelsea, London, S. W, 1.....	(1906)1917
SUSCHKIN, Dr. PETER, University, Kharkov, Russia.....	(1903)1918

CORRESPONDING FELLOWS.

ABBOTT, Dr. WILLIAM L., Aldine Hotel, Philadelphia, Pa.....	1916
ALFARO, Don ANASTASIO, San José, Costa Rica.....	1888
ALPHÉRAKY, SERGIUS N., Imperial Acad. Sci., Petrograd, Russia....	1913
ARRIBALZAGA, ENRIQUE LYNCH, Resistencia, Chaco, Argentina.....	1918
ARRIGONI DEGLI ODDI, Count ETTORE, Univ. of Padua, Padua, Italy.....	1900
ASHBY, EDWIN, Wittunga, Blackwood, Adelaide, South Australia....	1918
BAKER, E. C. STUART, Chief Police Office, West India Docks, London, E. 14, England.....	1918

BANNERMAN, DAVID ARMITAGE, 6 Palace Gardens Terrace, Kensington, London, W. 8, England.....	1916
BEDDARD, FRANK EVERS, Zool. Society of London, London, Eng.....	1917
BIANCHI, DR. VALENTINE, Imperial Zool. Museum, Petrograd, Russia.....	1916
BONHOTE, JOHN LEWIS, Gade Spring Lodge, Hemel Hempstead, Herts, England.....	1911
BUREAU, DR. LOUIS, École de Médecine, Nantes, France.....	1884
BÜTTIKOFER, DR. JOHANNES, Zoölogical Garden, Rotterdam, Holland.....	1886
CAMPBELL, ARCHIBALD JAMES, Custom House, Melbourne, Australia.....	1902
CARRIKER, M. A., Jr., Apartado 51, Santa Marta, Colombia... (1907).....	1912
CHAMBERLAIN, MONTAGUE, Cambridge, Mass..... (Founder).....	1901
CHUBB, CHARLES, British Museum (Nat. Hist.) Cromwell Road, London, S. W. 7.....	1911
CLARKE, WILLIAM EAGLE, Royal Scottish Museum, Edinburgh.....	1889
COLLINGE, DR. WALTER E., 3 Queen's Terrace, St. Andrews, Scotland.....	1918
DALGLEISH, JOHN J., Brankston Grange, Bogside Station, Alloa, Scotland.....	1883
DOLE, SANFORD B., Honolulu, Hawaii.....	1883
ECHT, ADOLPH BACHOFEN VON, Nussdorf, near Vienna, Austria.....	1883
FEILDEN, COL. HENRY WEMYSS, Burwash, Sussex, England.....	1884
FERRARI-PEREZ, Prof. FERNANDO, Tacubaya, D. F., Mexico.....	1885
FREKE, PERCY EVANS, South Point, Limes Road, Folkstone, England.....	1883
GODWIN-AUSTEN, Lieut.-Col. HENRY HAVERSHAM, Nore, Hascombe, Godalming, Surrey, England.....	1884
GRANDIDIER, ALFRED, 6 Rond-Point des Champs Élysées, Paris.....	1883
GURNEY, JOHN HENRY, Keswick Hall, Norwich, England.....	1883
GYLDESTOLPE, COUNT NILS, Naturhistoriska Riksmuseum, Vetenskapsakademien, Stockholm, Sweden.....	1918
HALL, ROBERT, Tasmanian Museum, Hobart, Tasmania.....	1916
HARTING, JAMES EDMUND, Portmore Lodge, Weybridge, Surrey, England.....	1883
HENNICKE, DR. CARL R., Gera, Reuss, Germany.....	1907
HENSON, HARRY V., Yokohama, Japan.....	1888
HUDSON, WILLIAM HENRY, Tower House, St. Luke's Road, Westbourne Park, London, W.....	1895
IREDALE, TOM, 39 Northcote Ave., Ealing, London, W. 5, England.....	1918
JOURDAIN, Rev. FRANCIS C. R., Appleton Rectory, Abingdon, Berks, England.....	1918
KLOSS, CECIL BODEN, Kuala Lumpur, Federated Malay States.....	1918
KRÜPER, DR. THEOBALD J., University Museum, Athens, Greece.....	1884
KURODA, NAGAMICHI, Fukuyoshi Cho, Akasaka, Tokyo, Japan.....	1918
LE SOUEF, DUDLEY, Zoölogical Gardens, Melbourne, Australia.....	1911
LOWE, DR. PERCY R., The Hatch, Windsor, England.....	1916
MACFARLANE, RODERICK, 251 Colony St., Winnipeg, Manitoba.....	1886
MADARÁSZ, DR. JULIUS VON, National Museum, Budapest, Hungary.....	1884

MATHEWS, GREGORY M., Foulis Court, Fair Oak, Hants, England . . .	1911
MENZBIER, Prof. Dr. MICHAEL, University for Women, Devitchje, Pola, Moscow, Russia	1884
MILLAIS, JOHN GUILLE, Compton's Brow, Horsham, Sussex, England .	1911
NAMIYE, M., Tokio, Japan	1886
NICHOLSON, FRANCIS, Ravenscroft, Windermere, Westmoreland, Eng- land	1884
OGILVIE-GRANT, WILLIAM ROBERT, British Museum (Nat. Hist.), Cromwell Road, London, S. W. 7	1899
PALMÉN, Dr. J. T., Helsingfors, Finland	1883
RAMSDEN, Dr. CHARLES T., Box 146, Guantanamo, Cuba	(1912)1918
RINGER, FREDERIC, Nagasaki, Japan	1888
ROBINSON, HERBERT C., Selangor State Museum, Kuala Lumpur, Federated Malay States	1918
SNETHLAGE, Dr. EMILIA, Museu Goeldi, Pará, Brazil	1915
SWYNNERTON, CHARLES FRANCIS MASSY, Gungunyana, Melssetter, South Rhodesia	1918
THEEL, Dr. JOHAN HJALMAR, University of Upsala, Upsala, Sweden .	1884
TICEHURST, NORMAN FREDERIC, 24 Pevensey Road, St. Leonards-on- Sea, Sussex, England	1918
TSCHURI ZU SCHMIDHOFFEN, VICTOR, RITTER VON, Villa Tännenhof, bei Hallein, Salzburg, Austria	1884
VAN OORT, EDUARD DANIEL, Museum Nat. Hist., Leyden, Holland .	1913
WATERHOUSE, F. H., Zool. Soc. of London, Regents' Park, London, N. W., England	1889
WINGE, Dr. HERLUF, Univ. Zoöl. Museum, Copenhagen, Denmark .	1903
WITHERBY, HARRY FORBES, 3 Cannon Place, Hampstead, London, N. W. 1, England	1916
WORCESTER, Prof. DEAN C., Manila, P. I.	1603
ZELEDON, Don JOSÉ C., San José, Costa Rica	1884

MEMBERS.

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ALLEN, FRANCIS H., 4 Park St., Boston, Mass.	(1888)1901
ALLEN, Dr. GLOVER M., 234 Berkeley St., Boston, Mass.	(1896)1904
ANDERSON, Dr. RUDOLPH M., Mus. Geol. Survey, Ottawa, Canada. (1907)	1914
ATTWATER, H. P., 2120 Genesee St., Houston, Texas	(1891)1901
BAILEY, VERNON, 1834 Kalorama Ave., Washington, D. C.	(1887)1901
BAILEY, Mrs. VERNON, 1834 Kalorama Ave., Washington, D. C. (1885)	1901
BAILY, WILLIAM L., Ardmore, Pa.	(1886)1901
BARBOUR, Dr. THOMAS, Mus. Comp. Zoölogy, Cambridge, Mass. (1903)	1914

- BARTSCH, Prof. PAUL, U. S. Nat. Museum, Washington, D. C. (1896)1902
 BECK, ROLLO HOWARD, San José, R. D. 288, Cal. (1894)1917
 BERGTOLD, Major W. H., 1159 Race St., Denver, Colo. (1889)1914
 BOND, FRANK, 3127 Newark St., N. W., Washington, D. C. (1887)1901
 BOWLES, JOHN HOOPER, The Woodstock, Tacoma, Wash. (1891)1910
 BRAISLIN, Dr. WILLIAM C., 425 Clinton Ave., Brooklyn, N. Y. (1894)1902
 BROOKS, Major ALLAN, Okanagan Landing, B. C. (1902)1909
 BROOKS, Ensign WM. SPRAGUE, 234 Berkeley St., Boston, Mass. (1907)1917
 BRYAN, WILLIAM ALANSON, College of Hawaii, Honolulu, Hawaiian Islands. (1898)1901
 BRYANT, HAROLD CHILD, Mus. Vert. Zool., Berkeley, Cal. (1913)1918
 BURNS, FRANK L., Berwyn, Pa. (1891)1901
 BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind. (1885)1901
 CHAMBERS, W. LEE, Eagle Rock, Cal. (1907)1913
 CHAPIN, Lieut. JAMES P., Amer. Mus. Nat. Hist., New York, N. Y. (1906)1917
 CHERRIE, GEORGE K., Newfane, Vt. (1917)1918
 CLARK, Dr. HUBERT LYMAN, Mus. Comparative Zool. Cambridge, Mass. (1886)1902
 DAGGETT, FRANK S., Museum, Exposition Park, Los Angeles, Cal. (1889)1901
 DAWSON, WM. L., R. D., No. 3, Box 110, Santa Barbara, Cal. (1895)1905
 DEANE, WALTER, 29 Brewster St., Cambridge, Mass. (1897)1901
 EATON, Prof. ELON HOWARD, 678 Main St., Geneva, N. Y. (1895)1907
 EVERMANN, Prof. BARTON W., Cal. Acad. Sci., San Francisco, Cal. (1883)1901
 FINLEY, WILLIAM L., 651 East Madison St., Portland, Ore. (1904)1907
 GAULT, BENJAMIN TRUE, Glen Ellyn, Ill. (1885)1903
 GOLDMAN, Major EDWARD A., Biological Survey, Washington, D. C. (1897)1902
 GRISCOM, Lieut. LUDLOW, 37 5th Ave., New York, N. Y. (1908)1918
 HARPER, Lieut. FRANCIS, 3001 24th St. N. E., Washington, D. C. (1907)1917
 HERSEY, F. SEYMOUR, 6 Maple Ave., Taunton, Mass. (1911)1916
 HOFFMANN, RALPH, 5554 Waterman Ave., St. Louis, Mo. (1893)1901
 HOLLISTER, NED, Nat. Zoological Park, Washington, D. C. (1894)1910
 HOWELL, A. BRAZIER, Covina, Cal. (1909)1916
 HOWELL, ARTHUR H., 2919 S. Dakota Ave., Washington, D. C. (1889)1902
 JACOBS, J. WARREN, 404 S. Washington St., Waynesburg, Pa. (1889)1904
 JEFFRIES, WILLIAM A., 11 Pemberton Square, Boston, Mass. (1883)1901
 JOB, HERBERT K., 291 Main St., West Haven, Conn. (1896)1901
 KALMBACH, EDWIN R., Biological Survey, Washington, D. C. (1910)1915
 *KENNARD, F. H., Dudley Road, Newton Centre, Mass. (1892)1912
 KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C. (1883)1902
 LAW, J. EUGENE, 833½ S. Catalina St., Los Angeles. (1907)1916
 MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass. (1890)1901

- MAILLIARD, JOHN W., 230 California St., San Francisco, Cal. (1895)1901
 MOORE, ROBERT THOMAS, Haddonfield, N. J. (1898)1914
 MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa. (1887)1903
 MORRIS, ROBERT O., 82 Temple St., Springfield, Mass. (1888)1904
 MURDOCH, JOHN, 16 High Rock Way, Allston, Mass. (1883)1901
 MURPHY, ROBERT C., Museum Brooklyn Institute, Eastern Parkway,
 Brooklyn, N. Y. (1905)1914
 NICHOLS, JOHN T., Am. Mus. Nat. Hist., New York, N. Y. (1901)1914
 NORTON, ARTHUR H., Mus. Nat. Hist., 22 Elm St., Portland, Me. (1890)1902
 PEARSON, T. GILBERT, 1974 Broadway, New York, N. Y. (1891)1902
 PETERS, Lieut. JAMES LEE, Harvard, Mass. (1904)1918
 PHILLIPS, Capt. JOHN C., Wenham, Mass. (1904)1912
 PREBLE, EDWARD A. Biological Survey, Washington, D. C. (1892)1901
 RATHBUN, SAMUEL F., 217 14th Ave., N., Seattle, Wash. (1893)1902
 RHODES, SAMUEL N., 81 Haddon Ave., Haddonfield, N. J. (1885)1901
 RILEY, JOSEPH H., U. S. National Museum, Washington, D. C. (1897)1905
 RIVES, Dr. WILLIAM C., 1702 Rhode Island Ave., Washington, D. C.
 (1885)1901
 ROBINSON, Col. WIRT, U. S. A., West Point, N. Y. (1897)1901
 SETON, ERNEST THOMPSON, Greenwich, Conn. (1883)1901
 *SHERMAN, Miss ALTHEA R., National via McGregor, Iowa. (1907)1912
 *SHIRAS, Hon. GEORGE, 3d, Stoneleigh Court, Washington, D. C. (1907)1915
 STEPHENS, FRANK, Nat. Hist. Museum, Balboa Park, San Diego, Cal.
 (1883)1901
 STRONG, Dr. REUBEN M., Vanderbilt Medical School, Nashville, Tenn.
 (1889)1903
 SWALES, BRADSHAW HALL, U. S. Nat. Mus., Washington, D. C. (1902)1909
 THAYER, JOHN ELIOT, Lancaster, Mass. (1898)1905
 TOWNSEND, Dr. CHARLES H., Aquarium, Battery Park, New York, N. Y.
 (1883)1901
 TOWNSEND, Dr. CHARLES WENDELL, 98 Pinckney St., Boston, Mass.
 (1901)1905
 TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa. (1888)1901
 TYLER, Capt. WINSOR M., 522 Mass. Ave., Lexington, Mass. ... (1912)1917
 WARREN, EDWARD ROYAL, 1511 Wood Ave., Colorado Springs, Colo.
 (1902)1910
 WAYNE, ARTHUR T., Mt. Pleasant, S. C. (1905)1906
 WETMORE, ALEX., Biological Survey, Washington, D. C. (1908)1912
 WILLETT, GEORGE, 2123 Court St., Los Angeles, Cal. (1912)1913
 WILLIAMS, ROBERT WHITE, Dept. Agric., Washington, D. C. ... (1900)1918
 WOLCOTT, Dr. ROBERT H., State University, Lincoln, Neb. ... (1901)1903
 WOOD, NORMAN A., Museum Univ. of Mich., Ann. Arbor, Mich. (1904)1912
 WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn. (1895)1901

ASSOCIATES.

ABBOTT, CLINTON GILBERT, Orchard Hill, Rhinebeck, N. Y.....	1898
ABBOTT, Miss FLORENCE I., Upland Road, Andover, Mass.....	1917
ABBOTT, Miss HARRIET, Fryeburg, Me.....	1918
ACKERMAN, JOSEPH MOODY, High St., Newburyport, Mass.....	1918
ADAMS, BENJAMIN, Wethersfield, Conn.....	1911
ADAMS, WALLACE, 2630 Webster Ave., Berkeley, Cal.....	1901
ADAMS, Dr. Z. B., 43 Cottage Farm Rd., Longwood, Mass.....	1908
AIKEN, Hon. JOHN, Superior Court, Court House, Boston, Mass.....	1905
AIMAR, Dr. CHARLES PONS, 4 Vanderhorst St., Charleston, S. C.....	1916
ALEXANDER, Miss ANNIE M., Suisun City, Cal.....	1911
ALLAMAN, RANSOM PERRY, R. D. No. 4, Bedford, Pa.....	1918
ALLEN, MARY P., 206 Moore St., Hackettstown, N. J.....	1913
ANDERSON, ERNEST M., Provincial Museum, Victoria, B. C.....	1915
ANDERSON, Mrs. J. C., Great Barrington, Mass.....	1903
ANGELL, WALTER A., 33 Westminster St., Providence, R. I.....	1901
ANTHONY, Capt. H. E., Amer. Mus. Nat. Hist., New York, N. Y.....	1911
APPEL, W. D., 4119 Houston Ave., Norwood, Ohio.....	1917
ARMITAGE, LUCIUS, 282 E. 162 St., New York, N. Y.....	1918
ARMSTRONG, EDWARD, E., 2249 Calumet Ave., Chicago, Ill.....	1904
ARNOLD, EDWARD, Grand Trunk R'y., Montreal, Quebec.....	1894
ARNOLD, Dr. W. W., 504 N. Nevada Ave., Colorado Springs, Colo.....	1910
ARTHUR, STANLEY CLISBY, 1109 Henry Clay Ave., New Orleans, La.....	1916
ASPINWALL, Mrs. CLARENCE A., 1839 Wyoming Ave., Washington, D. C.....	1916
ATHERTON, EDWARD H., 82 Ruthven St., Grove Hall, Mass.....	1917
AYRES, Miss MARY ADELINE, 119 High St., Medford, Mass.....	1915
BABCOCK, DEAN, Long's Peak, Colo.....	1911
BABCOCK, Capt. HAROLD LESTER, Woodleigh Road, Dedham, Mass.....	1916
BACHRACH, Mrs. BENJAMIN, 1437 West Main St., Decatur, Ill.....	1918
BACON, FRANCIS L., 236 Winona Ave., Germantown, Pa.....	1917
BADÉ, Dr. WM. FREDERIC, 2616 College Ave., Berkeley, Cal.....	1916
BADGER, ARTHUR C., 167 Dudley Road, Newton Centre, Mass.....	1917
BAGG, AARON C., 70 Fairfield Ave., Holyoke, Mass.....	1916
BAGG, EGBERT, JR., 406 Genesee St., Utica, N. Y.....	1916
BAGG, JOHN LEONARD, 89 Lexington Ave., Holyoke, Mass.....	1918
BAILEY, ALFRED M., La. State Mus., New Orleans, Louisiana.....	1918
BAILEY, Prof. GUY A., Genesee, N. Y.....	1910
BAIRD, Miss KATHARINE BRUCE, 815 Webster St., N. W., Washington, D. C.....	1918
BAKER, Lieut. JOHN H., Nat. Cash Register Co., Dayton, Ohio.....	1911
BALDWIN, ROGER N., 70 5th Ave., New York, N. Y.....	1904
BALDWIN, S. PRENTISS, 2930 Prospect Ave., Cleveland, Ohio.....	1917

BALES, Dr. BLENN R., 149 W. Main St., Circleville, Ohio.....	1907
BALL, Mrs. BENNET F., Oakville, Conn.....	1905
BALL, EDWARD M., East Falls Church, Va.....	1918
BALL, Dr. JAS. P., 5001 Frankford Ave., Philadelphia, Pa.....	1911
BARBOUR, Rev. ROBERT, Y. M. C. A., Montclair, N. J.....	1902
BARKER, Miss HELEN, 421 E. Adams St., Sandusky, O.....	1918
BARNARD, Judge JOB, 1401 Fairmont St., Washington, D. C.....	1886
BARNES, CLAUDE T., 359 Tenth Ave., Salt Lake City, Utah.....	1908
BARNES, Hon. R. MAGOON, Lacon, Ill.....	1889
BARRETT, CHAS. H. M., 1339 Valley Place, S. E., Washington, D. C.....	1912
BARRETT, HAROLD LAWRENCE, 172 Huntington Ave., Boston, Mass.....	1909
BARRY, Miss ANNA K., 5 Bowdoin Ave., Dorchester, Mass.....	1907
BARTLETT, HENRY, 49 Middle St., Acushnet, Mass.....	1917
BARTLETT, Miss MARY F., 227 Commonwealth Ave., Boston, Mass.....	1912
BARTRAM, EDWIN B., 200 N. 3rd St., Philadelphia, Pa.....	1913
BACHELOR, Mr. MARION C., 27 Janssen Pl., Kansas City, Mo.....	1916
BATTEN, GEORGE, 93 Union St., Montclair, N. J.....	1914
BAYNES, ERNEST HAROLD, Meriden, N. H.....	1918
BELL, Dr. W. B., Biological Survey, Washington, D. C.....	1912
BENNETT, Rev. GEORGE, Iowa City, Iowa.....	1913
BENNETT, WILLIAM J., 1941 1st St. N. W., Washington, D. C.....	1901
BENSON, C. STANLEY, 75 Plymouth St., North Abington, Mass.....	1915
BICKNELL, Mrs. F. T., 319 S. Normandie Ave., Los Angeles, Cal.....	1913
BIDDLE, Miss EMILY WILLIAMS, 2201 Sansom St., Philadelphia, Pa.....	1898
BIGELOW, Dr. LYMAN F., 80 Winter St., Norwood, Mass.....	1914
BLACKWELDER, ELIOT, Natural History Bldg., Urbana, Ill.....	1895
BLOOMFIELD, Mrs. C. C., 723 Main St., W., Jackson, Mich.....	1901
BOARDMAN, Miss E. D., 416 Marlborough St., Boston, Mass.....	1906
BODINE, Mrs. DONALDSON, 4 Mills Place, Crawfordsville, Ind.....	1916
BOGARDUS, Miss CHARLOTTE, Elm St., Coxsackie, N. Y.....	1909
BOGERT, WILLIAM S., 2610 Eldridge St., Bellingham, Wash.....	1904
BOLT, BENJAMIN FRANKLIN, 1421 Prospect Ave., Kansas City, Mo.....	1909
BOND, HARRY L., Lakefield, Minn.....	1908
BONFELS, FREDERICK G., 1500 E. 10th Ave., Denver, Colo.....	1918
BORLAND, Wm. G., 7 Wall St., New York, N. Y.....	1911
BOSSON, CAMPBELL, 30 State St., Boston, Mass.....	1906
BOULTON, W. RUDYUD, Jr., 338 1st St., Beaver, Pa.....	1915
BOURNE, THOS. L., Hamburg, N. Y.....	1913
BOWDISH, B. S., Demarest, N. J.....	1891
BOWDISH, Mrs. B. S., Demarest, N. J.....	1902
BOWDITCH, Dr. HAROLD, 60 Harvard Ave., Brookline, Mass.....	1900
BOWDITCH, JAMES H., 903 Tremont Bldg., Boston, Mass.....	1913
BOYD, Mrs. HARRIET T., 17 Marsh St., Dedham, Mass.....	1917
BOYLE, HOWARTH S., Amer. Mus. Nat. Hist., New York, N. Y.....	1916
BOYNTON, CHARLES T., 1005 S. Sheridan Road, Highland Park, Ill.....	1912

BRACKEN, Mrs. HENRY M., 1010 Fourth St., S.E., Minneapolis, Minn.	1897
BRADBURY, W. C., 1440 Race St., Denver, Colo.	1915
BRADLEE, Major THOMAS STEVENSON, Somerset Club, Boston, Mass.	1902
BRAINERD, BARRON, 57 Monmouth St., Brookline, Mass.	1917
BRANDRETH, COURTENAY, Ossining, N. Y.	1905
*BRANDRETH, FRANKLIN, Ossining, N. Y.	1889
BRANDT, HERBERT W., 2025 East 88th St., Cleveland, Ohio	1915
BREWSTER, EDWARD EVERETT, Iron River, Mich.	1893
BREWSTER, Mrs. WILLIAM, 145 Brattle St., Cambridge, Mass.	1912
BRIDGE, EDMUND, 52 Wyman St., West Medford, Mass.	1910
*BRIDGE, Mrs. EDMUND, 52 Wyman St., West Medford, Mass.	1902
BRIGGS, JOSEPH S., 1372 Powell St., Norristown, Pa.	1916
BRITTEN, Capt. G. S., 807 Walnut Ave., Syracuse, N. Y.	1913
BROCKWAY, ARTHUR W., Hadlyme, Conn.	1912
BROOKS, Rev. EARLE AMOS, 10 Beacon St., Everett, Mass.	1892
BROWN, Miss ANNIE H., 31 Maple St., Stoneham, Mass.	1909
BROWN, Miss BERTHA L., 53 Court St., Bangor, Me.	1918
BROWN, EDWARD J., 1609 S. Van Ness Ave., Los Angeles, Cal.	1891
BROWN, G. FRANKLIN, "Stonebridge," Needham, Mass.	1917
BROWN, HARRY A., 40 Talbot St., Lowell, Mass.	1912
BROWN, Mrs. HENRY TEMPLE, Lancaster, Mass.	1912
BROWN, PHILIP G., 85 Vaughan St., Portland, Me.	1911
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.	1895
BROWN, Wm. JAMES, 250 Oliver Ave., Westmount, Quebec.	1908
BROWNING, Wm. HALL, 16 Cooper Square, New York, N. Y.	1911
BRUEN, FRANK, 69 Prospect St., Bristol, Conn.	1908
BRUMBAUGH, CHALMERS S., 1020 Cathedral St., Baltimore, Md.	1916
BUCHANAN, ROLLIN E., Excelsior, Minn.	1918
BUNKER, CHARLES D., Kansas Univ. Museum, Lawrence, Kan.	1916
BURGESS, JOHN KINGSBURY, "Broad Oak," Dedham, Mass.	1898
BURLEIGH, THOS. D., 825 N. Negley Ave., Pittsburgh, Pa.	1913
BURNETT, WILLIAM L., State Agric. College, Fort Collins, Colo.	1895
BURTCH, VERDI, Branchport, N. Y.	1903
BUTTERWICK, CLAUDE A., 116 Broad St., Telford, Pa.	1917
BUTTERWORTH, FRANK SEILER, Prospect St., New Haven, Conn.	1918
BUZZELL, Mrs. JAS. C., 11 Hudson St., Bangor, Me.	1918
BYRD, Mrs. HIRAM, Winter Park, Fla.	1918
CADUC, EUGENE E., 512 Massachusetts Ave., Boston, Mass.	1910
CAHN, ALVIN R., 4720 Greenwood Ave., Chicago, Ill.	1917
CALLENDER, JAMES PHILLIPS, 32 Broadway, New York, N. Y.	1903
CAMPBELL, Mrs. Editha S., 263 W. 7th St., Erie, Pa.	1917
CANTWELL, GEORGE G., 901 W. Main Ave., Puyallup, Wash.	1916
CARNE, Mrs. THOMAS, 41 Melrose St., Adams, Mass.	1917

* Life Associate.

CARPENTER, REV. CHARLES KNAPP, 174 Forest Ave., Oak Park, Ill.	1894
CARPENTER, GEORGE I., 129 Dean St., Brooklyn, N. Y.	1907
CARRIGER, H. W., 5185 Trask St., Fruitvale Station, Oakland, Cal.	1913
CARROLL, MRS. OLIVIA GARNSEY, Rutland, Mass.	1918
CARTER, JOHN D., Lansdowne, Pa.	1907
CASH, HARRY A., 448 Hope St., Providence, R. I.	1898
CASWELL, MRS. ARTHUR E., 241 Union St., Athol, Mass.	1918
CHAMBERLAIN, CHAUNCEY W., 36 Lincoln St., Boston, Mass.	1885
CHAPIN, Prof. ANGIE CLARA, Wellesley College, Wellesley, Mass.	1896
CHAPMAN, MRS. F. M., Englewood, N. J.	1908
CHAPMAN, ROYAL N., Dept. Animal Biology, Univ. of Minnesota, Minneapolis, Minn.	1911
CHASE, SIDNEY, 25 Ames Bldg., Boston, Mass.	1904
CHEESMAN, MORTON R., 2703 Ocean Front, Ocean Park, Cal.	1911
CLAGET, CHAS. W., Upper Marlboro, Md.	1918
CLARK, CLARENCE H., Lubec, Me.	1913
CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.	1895
CLARKE, CHARLES E., 51 Summit R'd, Medford, Mass.	1907
CLARKE, MISS HARRIET E., 9 Chestnut St., Worcester, Mass.	1896
CLARKE, MISS MARY S., The Lamont, Pittsburgh, Pa.	1916
CLAY, C. IRVIN, Box 353, Eureka, Cal.	1918
CLEAVES, HOWARD H., Conservation Comm., Albany, N. Y.	1907
CLEVELAND, Dr. CLEMENT, 925 Park Ave., New York, N. Y.	1903
CLEVELAND, MISS LILLIAN, Woods Edge Road, West Medford, Mass.	1906
COALE, HENRY K., Highland Park, Ill.	1883
COBB, MISS ANNIE W., 20 Amsden St., Arlington, Mass.	1909
COBB, PHILIP HACKER, Loomis Inst., Windsor, Conn.	1917
COBB, Dr. STANLEY, 340 Adams St., Milton, Mass.	1909
CODY, Prof. WALTER GUYTON, 49 High St., Middletown, Conn.	1916
COFFIN, MRS. PERCIVAL B., 3232 Ellis Ave., Chicago, Ill.	1905
COFFIN, ROBERT L., Mass. Agric'l. Exp. Sta., Amherst, Mass.	1917
COGGINS, HERBERT L., 2929 Piedmont Ave., Berkeley, Cal.	1913
COLBURN, ALBERT E., 806 S. Broadway, Los Angeles, Cal.	1891
COLE, Dr. LEON J., College of Agric., Univ. of Wis., Madison, Wis.	1908
COMMONS, MRS. F. W., 608 Chamber of Commerce, Minneapolis, Minn.	1902
CONE, MRS. HENRY F., 4 Trinity St., Hartford, Conn.	1917
CONEY, MRS. GEO. H., R. F. D., Box 25, Windsor, Conn.	1906
CONGER, PAUL SIDNEY W., Prairie du Sac, Wis.	1918
COOK, FREDERICK W., 1604 East Harrison St., Seattle, Wash.	1915
COOK, MISS LILLIAN GILLETTE, Long Lea Farm, Amherst, Mass.	1899
COOKE, GEORGE J., Ambler, Pa.	1916
COOKE, MISS MAY THACHER, 1328 Twelfth St., Washington, D. C.	1915
COPE, FRANCIS R., Jr., Dimock, Pa.	1892
COPELAND, MISS ADA B., 1103 White Ave., Grand Junction, Colo.	1917
COPELAND, MANTON, 88 Federal St., Brunswick, Me.	1900

CORRINGTON, JULIAN DANA, 406 University Ave., Ithaca, N. Y.	1916
COURSEN, BLAIR, Univ. of Chicago, Chicago, Ill.	1918
COVELL, Dr. HENRY H., 1600 East Ave., Rochester, N. Y.	1918
CRAIG, WALLACE, Univ. of Maine, Orono, Me.	1912
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.	1893
CRANDALL, LEE S., N. Y. Zool. Park, New York, N. Y.	1909
CRANE, Miss CLARA L., Dalton, Mass.	1904
CRANE, Mrs. ZENAS, Dalton, Mass.	1904
CREHORE, FREDERIC M., Box 1252, Boston, Mass.	1913
CRESSY, Mrs. A. S., 287 Sargeant St., Hartford, Conn.	1912
CRIDDLE, NORMAN, Trusbank, Man.	1918
CROSBY, Capt. MAUNSELL S., Rhinebeck, N. Y.	1904
CROSS, ALBERT ASHLEY, Huntington, Mass.	1918
CROWELL, Miss J. OLIVIA, Dennis, Mass.	1918
CUMMINGS, Miss EMMA G., 16 Kennard Road, Brookline, Mass.	1903
CURRIER, EDMONDE SAMUEL, 416 E. Chicago St., Portland, Ore.	1894
CURRY, HASKELL BROOKS, 60 Bay State Road, Boston, Mass.	1916
CURTIS, CHARLES P., 244 Beacon St., Boston, Mass.	1915
CUSHMAN, Miss ALICE, 919 Pine St., Philadelphia, Pa.	1910
DANE, Mrs. ERNEST B., Chestnut Hill, Mass.	1912
DANFORTH, STUART T., 115 N. 6th Ave., New Brunswick, N. J.	1916
DAVENPORT, Mrs. ELIZABETH B., Brattleboro, Vt.	1898
DAVIDSON, Mrs. GAYLORD, 1302 W., S. Grand Ave., Springfield, Ill.	1912
DAY, CHESTER SESSIONS, 1711 Commonwealth Ave., Boston, Mass.	1897
DEAN, R. H., 720 Quintard Ave., Anniston, Ala.	1913
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.	1899
DECKER, HAROLD K., 342 Guyon Ave., Oakland Heights, N. Y.	1916
DELOACH, R. J. H., 6605 Harvard Ave., Chicago, Ill.	1910
DENSMORE, Miss MABEL, 910 4th St., Red Wing, Minn.	1910
DERBY, Major RICHARD, 116 E. 79th St., New York, N. Y.	1898
DERBY, WILLIAM M., JR., 4857 Kimbark Ave., Chicago, Ill.	1916
DEWEY, Dr. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.	1900
DEXTER, LEWIS, 1889 Elm St., Manchester, N. H.	1915
DICE, LEE RAYMOND, Dept. Zool., Univ. Illinois, Urbana, Ill.	1918
DICKEY, DONALD R., San Rafael Heights, Pasadena, Cal.	1907
DILL, Prof. HOMER R., State Univ. of Iowa, Iowa City, Ia.	1916
DILLE, FREDERICK M., Niobrara Reservation, Valentine, Neb.	1892
DIMICK, CHARLES W., 1007 Tremont Bldg., Boston, Mass.	1917
DIONNE, C. E., Laval University, Quebec, Canada.	1893
DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.	1891
DIXON, JOSEPH S., Univ. of Cal., Berkeley, Cal.	1917
DORN, Prof. LOUIS, Concordia College, Fort Wayne, Ind.	1912
DRUMMOND, Miss MARY, 510 Spring Lane, Lake Forest, Ill.	1904
DUBOIS, ALEXANDER D., Dutton, Mont.	
DULL, Mrs. A. P. L., 211 N. Front St., Harrisburg, Pa.	1900

DUNBAR, Miss LULU, R. D. 1, Elkhorn, Wis.....	1918
DURFEE, OWEN, Box 125, Fall River, Mass.....	1887
DURYEA, Miss ANNIE B., 62 Washington St., Newark, N. J.....	1911
DYKE, ARTHUR CURTIS, 205 Summer St., Bridgewater, Mass.....	1902
EASTMAN, Major FRANCIS B., Camp Grant, Ill.....	1909
*EATON, HOWARD, Wolf, Sheridan Co., Wyo.....	1918
EATON, Miss MARY S., 8 Monument St., Concord, Mass.....	1909
EATON, SCOTT HARRISON, Box 653, Lawrenceville, Ill.....	1912
EDSON, JOHN M., Marietta Road, Bellingham, Wash.....	1886
EDSON, WM. L. G., 54 Fairview Avenue, Rochester, N. Y.....	1916
EDWARDS, KATHARINE M., Wellesley College, Wellesley, Mass.....	1918
EHINGER, Dr. CLYDE E., 100 W. Rosedale Ave., West Chester, Pa.....	1904
EIFRIG, Prof. C. W. GUSTAVE, 504 Monroe Ave., Oak Park, Ill.....	1901
EIMBECK, Dr. AUGUST F., New Haven, Mo.....	1906
EKBLAW, SIDNEY E., R. F. D. 23, Rantoul, Ill.....	1918
EKBLAW, WALTER ELMER, 713 W. Washington Blv'd., Urbana, Ill.....	1911
ELDRIDGE, ARTHUR S., South Lincoln, Mass.....	1912
ELIOT, WILLARD AYRES, 1011 Thurman St., Portland, Ore.....	1918
ELLIOT, Mrs. J. W., 124 Beacon St., Boston, Mass.....	1912
ELLS, GEORGE P., Norwalk, Conn.....	1904
EMERSON, W. OTTO, Hayward, Cal.....	1916
ENO, HENRY LANE, Princeton, N. J.....	1918
EVANS, Dr. EVAN M., 550 Park Ave., New York, N. Y.....	1918
EVANS, WILLIAM B., Moorestown, N. J.....	1897
EYER, GEO. A., Short Hills, N. J.....	1918
FANNING, Dr. WALTER G., 2 Hunt St., Danvers, Mass.....	1917
FALGER, Mrs. WM., 1019 16th St., Modesto, Cal.....	1918
FARLEY, JOHN A., 52 Cedar St., Malden, Mass.....	1904
FARQUHAR, ARTHUR, York, Pa.....	1916
FARRAR, EDWARD ROGERS, South Lincoln, Mass.....	1917
FAXON, ALLAN HART, 7 Edwards St., Southbridge, Mass.....	1916
*FAY, DUDLEY B., 287 Beacon St., Boston, Mass.....	1916
FAY, Lieut. S. PRESCOTT, 53 State St., Boston, Mass.....	1907
FELGER, ALVA HOWARD, North Side High School, Denver, Colo.....	1898
FELL, Miss EMMA TREGO, 1534 N. Broad St., Philadelphia, Pa.....	1903
FIELD, Dr. GEORGE W., Biological Survey, Washington, D. C.....	1910
FISHER, Miss ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa.....	1896
FISHER, Dr. G. CLYDE, American Mus. Nat. Hist., New York, N. Y.....	1908
FLANAGAN, JOHN H., 89 Power St., Providence, R. I.....	1898
FLEISHER, EDWARD, 539 4th St., Brooklyn, N. Y.....	1916
FLETCHER, Mrs. MARY E., Proctorsville, Vt.....	1898
FLOYD, CHARLES BENTON, 382 Wolcott St., Auburndale, Mass.....	1916
FOOT, Dr. NATHAN CHANDLER, Readville, Mass.....	1916

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FOOTE, Miss F. HUBERTA, 260 Valentine Lane, Yonkers, N. Y.....	1897
FORBES, RALPH E., 328 Adams St., Milton, Mass.....	1917
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....	1901
FOSTER, FRANCIS A., Edgartown, Mass.....	1918
FOSTER, FRANK B., Haverford, Pa.....	1916
FOWLER, Capt. FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.....	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....	1898
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.....	1883
FRANCIS, NATHANIEL A., 35 Davis Ave., Brookline, Mass.....	1913
FRASER, DONALD, Johnstown, N. Y.....	1902
FREEMAN, LEONARD, Jr., 1374 Elizabeth St., Denver, Colo.....	1918
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.....	1903
FRENCH, CHARLES H., Canton, Mass.....	1904
FRENCH, Mrs. CHAS. H., Canton, Mass.....	1908
FROTHINGHAM, Mrs. RANDOLPH, The Copley Plaza, Boston, Mass.....	1913
FRY, Rev. HENRY J., 66 Eagle Rock Way, Montclair, N. J.....	1916
FULLER, HENRY C., 1348 Euclid St., Washington, D. C.....	1916
FULLER, Mrs. T. OTIS, Needham, Mass.....	1909
GABRIELSON, IRA N., Biological Survey, Washington, D. C.....	1912
GANIER, ALBERT F., 1023 Villa St., Nashville, Tenn.....	1917
GARDINER, CHARLES BARNES, 175 W. Main St., Norwalk, Ohio.....	1903
GARST, Dr. JULIUS, 29 Oread St., Worcester, Mass.....	1916
GERTH, WALTER G., 3929 Greenvew Ave., Chicago, Ill.....	1918
GERTKEN, Prof. SEVERIN, St. John's University, Collegeville, Minn.....	1912
GIANINI, CHAS. A., Poland, N. Y.....	1911
GIBSON, LANGDON, 5 Union St., Schenectady, N. Y.....	1887
GILMAN, M. FRENCH, Banning, Cal.....	1907
GLADDING, Mrs. JOHN R., 30 Stimson Ave., Providence, R. I.....	1912
GLEASON, Mrs. C. H., 700 Madison Ave., S. E., Grand Rapids, Mich.....	1917
GODING, EDWARD N., 73 Tremont St., Boston, Mass.....	1916
GOELITZ, WALTER A., 1622 Judson Ave., Ravinia, Ill.....	1916
GOLSAN, LEWIS S., Box 97, Prattville, Ala.....	1912
GOODE, Mrs. F. B., Billings St., Sharon, Mass.....	1918
GOODRICH, Miss JULIET T., 1210 Astor St., Chicago, Ill.....	1904
GORDON, HARRY E., 168 Asbury St., Rochester, N. Y.....	1911
GORMLEY, A. LIGNORI, Arnprior, Ont.....	1918
GORST, CHARLES C., 2 Arnold Circle, Cambridge, Mass.....	1916
GOULD, ALFRED M., Malden, Mass.....	1916
GOULD, JOSEPH E., Arcadia, Fla.....	1889
GRAHAM, Hon. WM. J., Aledo, Ill.....	1909
GRANGER, WALTER, Amer. Mus. Nat. Hist., New York, N. Y.....	1891
GRANT, WM. W., 600 Castle St., Geneva, N. Y.....	1910
GRAVES, Mrs. CHARLES B., 4 Mercer St., New London, Conn.....	1905
GRAY, GEORGE M., Box 89, Woods Hole, Mass.....	1916
GREEN, HORACE OAKES, 114 North Ave., Wakefield, Mass.....	1917

GREENOUGH, HENRY VOSE, 1134 Beacon St., Brookline, Mass.....	1901
GREENWOOD, FREDERICK, 1724 8th Ave., Spokane, Wash.....	1917
GREGORY, RAYMOND J., Princeton, Mass.....	1917
GREGORY, STEPHEN S., Jr., 2609 Hampden St., Chicago, Ill.....	1916
GRIFFIN, BERTRAM S., 22 Currier Ave., Haverhill, Mass.....	1917
GROW, MRS. EUGENE J., Lebanon, N. H.....	1916
HADLEY, ALDEN H., Monrovia, Indiana.....	1906
HAGAR, Lieut. J. A., 79 Washington Park, Newtonville, Mass.....	1914
HAGER, GEORGE W., R. F. D. 3, Peterboro, N. H.....	1917
HALL, F. GREGORY, Milton, Wis.....	1917
HALL, WM. WEBSTER, Jr., 70 W, 49th St., New York, N. Y.....	1917
HANDLEY, CHARLES O., Lewisburg, W. Va.....	1916
HANKINSON, THOS. LEROY, 900 11th St., Charleston, Ill.....	1897
HARDISTY, ARTHUR H., 2326 First St., N. W., Washington, D. C.....	1918
HARDON, MRS. HENRY W., Wilton, Conn.....	1905
HARRINGTON, RALPH M., 328 W. 57th St., New York, N. Y.....	1915
*HARRIS, HARRY, Kansas City, Mo.....	1911
HARTSHORN, HAROLD IRA, Am. Mus. Nat. Hist., New York, N. Y.....	1918
HARVEY, MRS. C. F., Vernon Hall, Kinston, N. C.....	1918
HARVEY, JOHN L., 3 Moody St., Waltham, Mass.....	1916
HASKELL, Miss SADIA, The Plymouth, Washington, D. C.....	1916
HATHAWAY, HARRY S., Box 1466, Providence, R. I.....	1897
HAVEMEYER, H. O., Mahwah, N. J.....	1893
HEACOCK, Miss ESTHER, Wyncote, Pa.....	1918
HELME, ARTHUR H., Miller Place, N. Y.....	1888
*HENDERSON, JOHN BROOKS, 16 St. & Florida Ave., N. W., Wash- ton, D. C.....	1918
HENDERSON, Judge JUNIUS, 627 Pine St., Boulder, Colo.....	1903
HENDERSON, WALTER C., 4727 13th St., N. W., Washington, D.C.....	1917
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....	1885
HENNESSEY, FRANK C., 457 Albert St., Ottawa, Canada.....	1914
HERMANN, THEODORE L., 273 Neal Dow Ave., W. New Brighton, N.Y.....	1916
HERRICK, FRANCIS H., Adelbert College, Cleveland, Ohio.....	1913
*HERRICK, HAROLD, 123 William St., New York, N. Y.....	1905
HERRICK, NEWBOLD, L., War College, Newport, R. I.....	1913
HERRICK, N. LAWRENCE, Jr., War College, Newport, R. I.....	1917
HERRICK, Mrs. W. H., Topsfield, Mass.....	1918
HEWITT, Dr. C. GORDON, Dept. Agric., Ottawa, Canada.....	1918
HIGGINS, A. W., Sandwich, Mass.....	1918
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, Mrs. THOMAS R., Box 491, Chautauqua, N. Y.....	1903
HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....	1912
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio....	1899

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HIX, GEORGE E., 100 W. 91st St., New York, N. Y.....	1904
HOLLAND, HAROLD MAY, Galesburg, Ill.....	1910
HOLLAND, DR. WILLIAM J., Carnegie Museum, Pittsburgh, Pa.....	1899
HOLLISTER, WARREN D., 2527 Albion St., Denver, Colo.....	1901
HOLMAN, RALPH H., 481 Main St., Stoneham, Mass.....	1907
HOLT, LIEUT. ERNEST G., Biological Survey, Washington, D. C.....	1911
HONYWILL, ALBERT W., JR., 210 Farmington Ave., Hartford, Conn.....	1907
HORSFALL, ROBERT BRUCE, 1457 E. 18th St., Portland, Ore.....	1905
HOTCHKISS, HIRAM A., Harding, Mass.....	1917
HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....	1903
HOYT, WILLIAM H., Box 425, Stamford, Conn.....	1907
HUBBARD, C. ANDRESEN, 1249 E. Harrison St., Portland, Ore.....	1916
HUBBARD, PROF. MARIAN E., 15 Appleby Road, Wellesley, Mass.....	1916
HUBBARD, RALPH, 1038 University Ave., Boulder, Colo.....	1916
HUBER, WHARTON, 225 St. Marks Sq., Philadelphia, Pa.....	1915
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....	1895
HUNT, RICHARD MONTAGUE, Mus. Vert. Zool., Berkeley, Cal.....	1918
HUSHER, MRS. GERTRUDE H., 821 So. Hope St., Los Angeles, Cal.....	1918
HUSSEY, ROLAND F., 1308 Ann St., Ann Arbor, Mich.....	1915
HYDE, MRS. S. E., Mayfield, Idaho.....	1908
INGERSOLL, ALBERT M., 908 F St., San Diego, Cal.....	1885
ISHAM, CHAS. B., 27 W. 67 St., New York, N. Y.....	1891
JACKSON, DR. HARTLEY H. T., Biological Survey, Washington, D. C.....	1910
JACKSON, RALPH W., R. D. 1, Cambridge, Md.....	1918
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.....	1888
JAMES, NORMAN, Catonsville, Md.....	1913
JENKS, CHAS. W., Bedford, Mass.....	1912
JENNEY, CHARLES F., 100 Gordon Ave., Hyde Park, Mass.....	1905
JENNINGS, DR. GEO. H., Jewett City, Conn.....	1918
JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....	1913
JENSEN, J. K., U. S. Indian School, Wahpeton, N. Dak.....	1912
JEWETT, STANLEY G., Pendleton, Ore.....	1906
JOHNSON, FRANK E., 16 Amackassin Terrace, Yonkers, N. Y.....	1888
JOHNSON, MRS. GRACE PETTIS, City Library Asso., Springfield, Mass.....	1908
JONES, DR. LOMBARD CARTER, Falmouth, Mass.....	1917
JONES, WILLIAM F., Norway, Me.....	1918
JORDAN, A. H. B., Everett, Wash.....	1888
JUMP, MRS. EDWIN R., 97 Oakleigh Road, Newton, Mass.....	1910
JUNKIN, FRANCIS T. A., 2541 Michigan Ave., Chicago, Ill.....	1917
KAEDING, GEO. L. Battle Mountain, Nev.....	1918
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario.....	1899
KELLOGG, RALPH T., Silver City, N. M.....	1913
KELSO, DR. JOHN E. H., Edgewood, Lower Arrow Lake, B. C.....	1915
KENISTON, ALLAN, Vineyard Haven, Mass.....	1917
KENNEDY, DR. HARRIS, Readville, Mass.....	1916

KENT, DUANE E., 47 West St., Rutland, Vt.....	1913
KENT, EDWIN C., 156 Broadway, New York, N. Y.....	1907
KERMODE, FRANCIS, Provincial Museum, Victoria, B. C.....	1904
*KIDDER, NATHANIEL T., Milton, Mass.....	1906
KILGORE, WILLIAM, Jr., 132 Orlin Ave., S. E., Minneapolis, Minn.....	1906
KINGSBURY, FREDERICK S., Univ. Club, Milwaukee, Wis.....	1916
KING, LeROY, 20 E. 84th St., New York, N. Y.....	1901
KIRKHAM, MRS. JAMES W., 275 Maple St., Springfield, Mass.....	1904
*KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....	1910
KIRKWOOD, FRANK C., R. F. D. 3, Monkton, Md.....	1892
KITTREDGE, Lieut. JOSEPH, Jr., Engineers, H. L. C., A. E. F., France	1910
KLOSEMAN, Miss JESSIE E., Beal Hall, 20 Charlesgate W., Boston, Mass.....	1909
KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....	1906
KNOLHOFF, FERDINAND WILLIAM, Amityville, N. Y.....	1890
KRETZMAN, Prof. P. E., 1230 St. Anthony Ave., St. Paul, Minn.....	1913
KUSER, ANTHONY R., Bernardsville, N. J.....	1908
KUSER, MRS. ANTHONY R., Bernardsville, N. J.....	1910
KUSER, JOHN DRYDEN, Bernardsville, N. J.....	1910
LACEY, HOWARD GEORGE, R. F. D. 1, Kerrville, Texas.....	1899
LADD, HARRY STEPHEN, 71 Madison St., Seattle, Wash.....	1917
LaDOW, STANLEY V., 622 W. 113th St., New York, N. Y.....	1913
LAING, HAMILTON M., 1277 E. 32nd St., Portland, Ore.....	1917
LAMB, CHAS. R., 8 Highland St., Cambridge, Mass.....	1912
LANCASHIRE, MRS. JAMES HENRY, 7 West 75th St., New York, N. Y..	1909
LANG, HERBERT, Amer. Mus. Nat. Hist., New York, N. Y.....	1907
LANGDON, ROY M., 709 N. 3rd Ave., Maywood, Ill.....	1918
LARRABEE, Prof. AUSTIN P., Yankton College, Yankton, S. Dak.....	1918
LATHAM, ROY, Orient, N. Y.....	1916
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Philadelphia, Pa.....	1902
LAWSON, RALPH, 88 Washington Sq. East, Salem, Mass.....	1917
LEE, JOHN C., Grove St., Wellesley, Mass.....	1917
LEISTER, CLAUDE W., 113 Osmun Place, Ithaca, N. Y.....	1916
LENGERKE, JUSTUS VON, 211 Highland Ave., Orange, N. J.....	1907
LEOPOLD, ALDO, 135 S. 14th St., Albuquerque, N. Mex.....	1916
LEOPOLD, NATHAN, JR., 4754 Greenwood Ave., Chicago, Ill.....	1916
LEVY, MRS. WILLIAM, Alton Bay, N. H.....	1915
LEWIS, HARRISON F., P. O. Box 6, Quebec, Canada.....	1912
LEWIS, MRS. HERMAN E., 120 Grove St., Haverhill, Mass.....	1912
LIEBOLD, ERNEST G., 94 Rhode I. Ave., Highland Park, Mich.....	1918
LIGON, J. STOKLEY, Box 131, Albuquerque, New Mexico.....	1912
LINCOLN, FREDERICK CHARLES, 4150 Clay St., Denver, Colo.....	1910
LINDSAY, CLARENCE M., 213 Congress St., Brooklyn, N. Y.....	1918

* Life Associate.

LINGS, GEO. H., Richmond Hill, Cheadle, Cheshire, England.....	1913
LITTLE, LUTHER 2d, 1403 Garfield Ave., So. Pasadena, Cal.....	1913
LLOYD, HOYES, 406 Queen St., Ottawa, Canada.....	1916
LONG, CHAS. IRVING, 130 5th Ave., Roselle, N. J.....	1918
LORD, THOMAS HENRY, Newington, N. H.....	1916
LORING, Lieut. J. ALDEN, Owego, N. Y.....	1917
LOW, ETHELBERT I., 38 E. 64th St., New York, N. Y.....	1907
LUCE, MRS. FRANCIS P., Box 216, Vineyard Haven, Mass.....	1912
LUM, EDWARD H., Chatham, N. J.....	1904
MACKIE, DR. WILLIAM C., 54 Coolidge St., Brookline, Mass.....	1908
MACLAY, MARK W., Jr., 106 E. 85 St., New York, N. Y.....	1905
MACREYNOLDS, GEORGE, 76 E. State St. Doylestown, Pa.....	1917
MADDOCK, MISS EMELINE, 6386 Drexel Road, Overbrook, Pa.....	1897
MAHER, J. E., 59 Robinson St., Sharon, Pa.....	1902
MAIN, FRANK H., Pittsfield, Mass.....	1913
MAITLAND, ROBERT L., 141 Broadway, New York, N. Y.....	1889
MANN, ELIAS P., Williamstown, Mass.....	1912
MAPLES, JAMES C., Port Chester, N. Y.....	1913
MARBLE, RICHARD M., Woodstock, Vt.....	1907
MARCKRES, GEO. M., Sharon, Conn.....	1918
MARKE, EDWARD SIDNEY, 655 Kearney Ave., Arlington, N. J.....	1915
MARRS, MRS. KINGSMILL, 9 Commonwealth Ave., Boston, Mass.....	1903
MARSHALL, ALFRED, 17 S. Jefferson St., Chicago, Ill.....	1916
*MARSHALL, MRS. ELLA M. O., New Salem, Mass.....	1912
MARX, Capt. EDWARD J. F., 207 Burke St., Easton, Pa.....	1907
MATHEWS, F. SCHUYLER, 17 Frost St., Cambridge, Mass.....	1917
MATTERN, EDWIN S., 1042 Walnut St., Allentown, Pa.....	1912
MATTERN, WALTER I., 1042 Walnut St., Allentown, Pa.....	1916
MAY, Dr. JOHN B., Cohasset, Mass.....	1912
MAYFIELD, Dr. GEORGE R., Kissam Hall, Nashville, Tenn.....	1917
McCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.....	1900
McCONNELL, THOMAS S., 1813 Huey St., McKeesport, Pa.....	1915
McCOOK, Major PHILIP J., 571 Park Ave., New York, N. Y.....	1895
McGEEVER, MYLES STANDISH, 60 Keene St., Lowell, Mass.....	1918
McGRAW, HARRY A., 1805 15th Ave., Altoona, Pa.....	1917
McGREW, ALBERT D., 5611 Stanton Ave., Pittsburgh, Pa.....	1917
McHARG, THOMAS A., 725 Highland Ave., Boulder, Colo.....	1918
McHATTON, T. H., 163 Mell St., Athens, Ga.....	1917
McILHENNY, EDWARD AVERY, Avery Island, La.....	1894
McINTIRE, MRS. HERBERT BRUCE, 4 Garden St., Cambridge, Mass.....	1908
McLAIN, ROBERT BAIRD, Market and 12th St., Wheeling, W. Va.....	1893
McLANE, JAMES LATIMER, Jr., Garrison, Md.....	1915
McLEAN, Hon. GEO. P., 1520 New Hampshire Ave., Washington, D. C.....	1913

* Life Associate.

McMILLAN, MRS. GILBERT N., Gorham, N. H.	1902
MEAD, MRS. E. M., 303 W. 84th St., New York, N. Y.	1904
MEANS, CHAS. J., 29 Marlborough St., Boston, Mass.	1912
MENGEL, G. HENRY, 739 Madison Ave., Reading, Pa.	1913
MERRIAM, HENRY F., R. F. D. 1, Newton, N. J.	1905
MERRILL, ALBERT R., Hamilton, Mass.	1912
MERRILL, B. G. Hinsdale, Ill.	1917
MERRILL, D. E., State College, New Mexico.	1913
MERRILL, HARRY, 316 State St., Bangor, Maine.	1883
MERSHON, W. B., Saginaw, Mich.	1905
METCALF, Lieut. F. P., Biological Survey, Washington, D. C.	1917
METCALF, Z. P., A. & M. College, West Raleigh, N. C.	1913
MEYER, Major G. RALPH, 126 South, Ft. Monroe, Va.	1913
MEYER, Miss HELOISE, Lenox, Mass.	1913
MILES, MRS. HENRY A., Hingham, Mass.	1917
MILLER, Miss BERTHA STUART, Box 2, Palisade, N. J.	1915
MILLER, Miss CARRIE ELLA, 36 Cottage St., Lewiston, Me.	1918
MILLER, CHAS. W., Jaffna College, Jaffna, Ceylon.	1909
MILLER, MRS. ELISABETH C. T., 1010 Euclid Ave., Cleveland, Ohio.	1916
MILLER, Dr. LOYE HOLMES, State Normal School, Los Angeles, Cal.	1918
MILLS, ENOS A., Estes Park, Colo.	1916
MINER, LEO D., 1836 Vernon St., N. W. Washington, D. C.	1913
MITCHELL, CATHERINE ADAMS, Riverside, Ill.	1911
MITCHELL, MASON, U. S. Consul, Apia, Samoa.	1916
MITCHELL, Capt. WALTON I., 3210 E. 1st St., Wichita, Kan.	1893
MOODY, A. J., c/o Aetna Life Ins. Co., Hartford, Conn.	1918
MOODY, HARRY LEE, Glyndon, Minn.	1916
MOODY, Dr. WM. LADD, Newport, R. I.	1918
MOORE, ELIZABETH PUTNAM, North Anson, Me.	1905
MORCOM, G. FREAN, 243 N. Coronado St., Los Angeles, Cal.	1886
MORLEY, S. GRISWOLD, 2535 Etna St., Berkeley, Cal.	1911
MORRISON, ALVA, 3 Shady Hill Sq., Cambridge, Mass.	1915
MORSE, HARRY GILMAN, Huron, Ohio.	1912
MORSS, CHAS. B., 35 Greenleaf St., Bradford, Mass.	1918
MOSELEY, Prof. EDWIN LINCOLN, Bowling Green, Ohio.	1918
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass.	1905
MOUSLEY, WM. HENRY, Hatley, Quebec, Canada.	1915
MUNRO, J. A., Okanagan Landing, British Columbia, Canada.	1913
MURIE, Lieut. O. J., 219 7th Ave. S, Moorhead, Minn.	1913
MYERS, MRS. HARRIET W., 311 N. Ave. 66, Los Angeles, Cal.	1906
MYERS, Miss LUCY F., 127 Academy St., Poughkeepsie, N. Y.	1898
NAUMAN, E. D., Box 606, Sigourney, Iowa.	1918
NICHOLS, L. NELSON, N. Y. Public Library, New York, N. Y.	1917
NIMS, MRS. LUCIUS, 17 Union St., Greenfield, Mass.	1913
NOBLE, ELEANOR G., 66 Sparks St., Cambridge, Mass.	1916

NOBLE, Ensign G. KINGSLEY, Mus. Comp. Zoölogy, Cambridge, Mass.....	1916
NOKES, Dr. I. D., 134 W. 55th St., Los Angeles, Cal.....	1915
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, EDWARD, 301 W. Springfield Ave., Philadelphia, Pa.....	1916
NORRIS, J. PARKER, Jr., 2122 Pine St., Philadelphia, Pa.....	1904
NORTON, Mrs. CARRIE MORSE, Faulkton, S. Dak.....	1918
NOWELL, JOHN ROWLAND, 300 Parkwood Boulev., Schenectady, N. Y.....	1897
OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....	1897
OLDYS, HENRY, Silver Springs, Md.....	1896
OLIVER, Mrs. EDITH HOLLICK, 48 St. Nicholas Pl., New York, N. Y.....	1918
*OLIVER, Dr. HENRY KEMBLE, 4 Newbury St., Boston, Mass.....	1900
OSBORN, ARTHUR A., 58 Washington St., Peabody, Mass.....	1912
OSGOODE, HARRY W., 16 Elm St., Pittsfield, N. H.....	1918
OTTEMILLER, FREE, 30 N. Pine St., York, Pa.....	1914
OVERTON, Dr. FRANK, Patchogue, N. Y.....	1909
*OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PACKARD, WINTHROP, 1442 Washington St., Canton, Mass.....	1917
PAINE, AUGUSTUS G., Jr., 18 West 49th St., New York, N. Y.....	1886
PAINE, CHARLES JACKSON, 705 Sears Bldg., Boston, Mass.....	1917
PALMER, Mrs. BERTHA ELLIS, 1939 Biltmore St., N. W., Washington, D. C.....	1918
*PALMER, Miss ELIZABETH DAY, 1741 S. Harvard Blv'd, Los Angeles, Cal.....	1918
PALMER, R. H., 222 Dietrich Blk., Pocatello, Ida.....	1917
PALMER, Dr. SAMUEL C., 712 Ogden Ave., Swarthmore, Pa.....	1899
PALMER, Mrs. T. S., 1939 Biltmore St., Washington, D. C.....	1918
PANGBURN, CLIFFORD H., 731 Elm St., New Haven, Conn.....	1907
*PARKER, EDWARD LUDLOW, Nashawtuc Rd., Concord, Mass.....	1916
PARKS, Mrs. F. R., 128 Crafts Rd., Chestnut Hill, Mass.....	1918
PAUL, LUCIUS H., 1485 North St., Rochester, N. Y.....	1908
PAXTON, Mrs. REGINA A., 3135 Highland Pl., Cleveland Park, D. C.....	1917
PEABODY, Rev. P. B., Blue Rapids, Kan.....	1903
PEMBERTON, JOHN ROY, 803 Mayo Bldg., Tulsa, Okla.....	1918
PENARD, THOS. E., 16 Norfolk Road, Arlington, Mass.....	1912
PENFIELD, Miss ANNIE L., 155 Charles St., Boston, Mass.....	1912
PENNELL, Miss ELIZABETH A. S., 252 Maine St., Brunswick, Me.....	1918
PEPPER, Lt. Col. WM., 1811 Spruce St., Philadelphia, Pa.....	1911
PERINE, KEBLE, 26 Trull St., Boston, Mass.....	1917
PERKINS, Dr. ANNA E., Gowanda Hospital, Collins, N. Y.....	1917
PERKINS, ARTHUR W., 21 High St., Farmington, Me.....	1915
PERKINS, Dr. GEO. H., Univ. of Vt., Burlington, Vt.....	1912

PERRY, DR. HENRY JOSEPH, 45 Bay State Road, Boston, Mass.....	1909
PETERS, ALBERT S., Lake Wilson, Minn.....	1908
PHELPS, FRANK M., 212 E. 4th St., Elyria, Ohio.....	1912
PHELPS, MRS. J. W., Box 36, Northfield, Mass.....	1899
PHILIPP, PHILIP B., 220 Broadway, New York, N. Y.....	1907
PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.....	1891
PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.....	1912
PIERCE, WRIGHT McEWEN, Box 343, Claremont, Cal.....	1918
PILSBURY, FRANK O., 1088 Main St., Walpole, Mass.....	1917
PINCHOT, GIFFORD, 1617 Rhode Island Ave., Washington, D. C.....	1910
PLATT, HON. EDMUND, Poughkeepsie, N. Y.....	1917
POE, MISS MARGARETTA, 1204 N. Charles St., Baltimore, Md.....	1899
POOLE, EARL L., School Admin. Bldg., Reading, Pa.....	1916
PORTER, LOUIS H., Stamford, Conn.....	1893
POST, WILLIAM S., Bernardsville, N. J.....	1911
POTTER, JULIAN K., 563 Bailey St., Camden, N. J.....	1912
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.....	1892
PRATT, HON. GEO. D., State Conservation Commission, Albany, N. Y.....	1917
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....	1906
PRICE, LIGON, R. F. D. 1, Dunmore, W. Va.....	1913
PRITCHARD, MRS. F. A., 203 N. Court St., Medina, Ohio.....	1918
PROVO, W. F., Wickliffe, Ohio.....	1916
PURDY, JAMES B., R. F. D. 4, Plymouth, Mich.....	1893
QUARLES, EMMET AUGUSTUS, 40 Davenport Ave., Stamford, Conn.....	1918
QUIGGLE, JAMES C., 1410 M St., N. W., Washington, D. C.....	1915
RAKER, MISS MARY E., 1484 E. Sherman St., Portland, Ore.....	1918
RATLIFF, HON. WALTER S., R. R. B., Box 276, Richmond, Ind.....	1918
RAVEN, HENRY CUSHIER, Bayshore, N. Y.....	1918
RAWSON, CHAS. I., Oxford, Mass.....	1917
REA, PAUL M., Charleston Museum, Charleston, S. C.....	1912
REAGH, DR. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.....	1896
REGAR, H. SEVERN, 1400 De Kalb St., Norristown, Pa.....	1916
REHN, JAMES A. G., 6033 B Catherine St., Philadelphia, Pa.....	1901
REICHENBERGER, MRS. VICTOR M., Hotel Essex, New York, N. Y.....	1916
REID, MRS. BRUCE, Gulf Refinery, Port Arthur, Tex.....	1918
RETT, EGMONT Z., 3902 Pecos St., Denver, Colo.....	1917
RHOADS, CHARLES J., National Reserve Bank, Philadelphia, Pa.....	1895
RICE, JAMES HENRY, Brick House Plantation, Wiggins, S. C.....	1910
RICE, WARD J., Roachdale, Ind.....	1913
RICHARDS, MISS HARRIET E., 36 Longwood Ave., Brookline, Mass.....	1900
RICHARDSON, W. D., 4215 Prairie Ave., Chicago, Ill.....	1917
RIDDLE, ROBERT, 21 W. Rogers Ave., Merchantville, N. J.....	1916
RIDDLE, S. EARL, Y. M. C. A., Chester, Pa.....	1916
RIDGWAY, JOHN L., Geological Survey, Washington, D. C.....	1890
RIKER, CLARENCE B., 43 Scotland Road, South Orange, N. J.....	1885

ROBBEN, Miss NANCY P. H., 412 E. Merrimack St., Lowell, Mass.	1917
ROBBINS, CHARLES A., Onset, Mass.	1914
ROBBINS, ROYAL E., 61 Monmouth St., Brookline, Mass.	1917
ROBERTS, WILLIAM ELY, 207 McKinley Ave., Lansdowne, Pa.	1902
ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Cal.	1911
ROBINSON, ANTHONY W., Haverford, Pa.	1903
*ROGERS, CHARLES H., Amer. Mus. Nat. Hist., New York, N. Y.	1904
ROLAND, CONRAD K., 1208 De Kalb St., Norristown, Pa.	1917
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.	1896
ROSS, GEORGE H., 23 West St., Rutland, Vt.	1904
ROSS, Dr. LUCRETIVS H., 507 Main St., Bennington, Vt.	1912
ROWLEY, JOHN, 42 Plaza Drive, Berkeley, Cal.	1889
RUST, HENRY J., Coeur d'Alene, Ida.	1918
SACKETT, CLARENCE, Rye, N. Y.	1910
SAGE, HENRY M., Menands Road, Albany, N. Y.	1885
SAMPSON, Miss MYRA M., 30 Green St., Northampton, Mass.	1918
SANBORN, COLIN C., Box 50, Evanston, Ill.	1911
SANTENS, REMI H., Carnegie Museum, Pittsburgh, Pa.	1918
SAUNDERS, ARETAS A., 143 East Ave., Norwalk, Conn.	1907
SAVAGE, L. F., 1210 Jenny Lind St., McKeesport, Pa.	1917
SCHAEFER, OSCAR FREDERICK, 66 Genesee St., Rochester, N. Y.	1916
SCHAFER, J. J., Port Byron, Ill.	1918
SCHENCK, FREDERIC, Lenox, Mass.	1912
SCHONNEGEL, JULIAN ELIOT, 92 Morningside Ave. E., New York, N. Y.	1918
SCHORGER, A. W., 2021 Kendall Ave., Madison, Wis.	1913
SCOVILLE, SAMUEL, JR., 415 Lancaster Ave., Haverford, Pa.	1916
SCUDDER, BRADFORD A., 146 W. 105th St., New York, N. Y.	1917
SEARS, WILLIAM R., 73 Tremont St., Boston, Mass.	1916
SERRILL, WILLIAM J., Haverford, Pa.	1916
SEWELL, JAS. W. JR., 2218 Patterson St., Nashville, Tenn.	1918
SHARPLES, ROBERT P., West Chester, Pa.	1907
SHAW, HENRY S., 78 Cypress St., Newton Centre, Mass.	1916
SHAW, WILLIAM T., 1000 Thatuna St., Pullman, Wash.	1908
SHEA, DANIEL W., Catholic Univ. of Amer., Washington, D. C.	1917
SHEARER, Dr. AMON R., Mont Belvieu, Tex.	1905
SHELDON, CHARLES, 16th & Webster Sts., Washington, D. C.	1911
SHELLEY, F. L., Cottonwood Falls, Kan.	1918
SHELTON, Lieut. ALFRED C., Care Johnston Shelton Co., Dayton, Ohio.	1911
SHIRLEY, GARLAND L., Dayton, Va.	1916
SHIRLEY, LESTER L., 604 So. 10th St., Vincennes, Ind.	1917
SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.	1910
SHOEMAKER, HENRY W., McElhattan, Pa.	1912

SHOFFNER, CHARLES P., 2011 Wallace St., Philadelphia, Pa.....	1915
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....	1899
SILLIMAN, O. P., 220 Salinas St., Salinas, Cal.....	1915
SILSBEE, THOMAS, 115 Marlborough St., Boston, Mass.....	1916
SILVER, JOHN A., Aberdeen, Md.....	1918
SIMMONS, GEO. FINLAY, Rice Institute, Houston, Texas.....	1910
SKINNER, M. P., Summerville, S. C.....	1916
SMITH, AUSTIN PAUL, 2102 E. 83d St., Cleveland, Ohio.....	1911
SMITH, Rev. FRANCIS CURTIS, 22 Jewett Pl., Utica, N. Y.....	1903
SMITH, Prof. FRANK, 913 West California Ave., Urbana, Ill.....	1909
SMITH, HORACE G., 2918 Lafayette St., Denver, Colo.....	1888
SMITH, LESTER W., 60 Cottage St., Meriden, Conn.....	1916
SMITH, NAPIER, 46 Côtés des Neiges Road, Montreal, Canada.....	1915
SMITH, Mrs. WALLIS C., 525 N. Michigan Ave., Saginaw, W. S., Mich.....	1916
SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va.....	1892
SNYDER, WILL EDWIN, 226 First St., Beaver Dam, Wis.....	1895
SOPER, JOSEPH DEWEY, R. D. 2, Preston, Ont., Canada.....	1918
SOULE, CAROLINE GRAY, 187 Walnut St., Brookline, Mass.....	1917
SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.....	1911
SPENCER, Miss CLEMENTINA S., Dept. of Zoölogy, Coe College, Cedar Rapids, Iowa.....	1917
STANWOOD, Miss CORDELIA JOHNSON, Ellsworth, Me.....	1909
STAPLETON, RICHARD, 219 High St., Holyoke, Mass.....	1916
STEELE, HENRY B., 4530 Drexel Boulevard, Chicago, Ill.....	1917
STEPHENS, T. C., Morningside College, Sioux City, Iowa.....	1909
STEPHENSON, Mrs. JESSE, Monte Vista, Colo.....	1918
STEVENS, Dr. J. F., Box 1546, Lincoln, Neb.....	1908
STEWART, Mrs. CECIL, 451 Beacon St., Boston, Mass.....	1917
STILES, EDGAR C., 345 Main St., West Haven, Conn.....	1907
STIMSON, Dr. ARTHUR M., Raymond St., Chevy Chase, Md.....	1917
STODDARD, HERBERT LEE, Field Museum Nat. Hist., Chicago, Ill.....	1912
STORER, Lieut. TRACY IRWIN, Mus. Vert. Zoölogy, Berkeley, Cal.....	1916
STRAW, Mrs. HERMAN F., 607 Chestnut St., Manchester, N. H.....	1916
STREET, J. FLETCHER, Beverly, N. J.....	1908
STRUTHERS, Rev. ALFRED L., Townsend, Mass.....	1918
STUART, FRANK A., 118 Green St., Marshall, Mich.....	1915
STUART, GEO. H., 3rd, 923 Clinton St., Philadelphia, Pa.....	1913
STURGIS, S. WARREN, Groton, Mass.....	1910
STURTEVANT, EDWARD, St. George's School, Newport, R. I.....	1896
SUGDEN, ARTHUR W., 35 Concord St., Hartford, Conn.....	1913
SWAIN, JOHN MERTON, Box 528, Farmington, Me.....	1899
SWEENEY, J. A., Forest Service, Halsey, Neb.....	1916
SWENK, MYRON H., 3028 Starr St., Lincoln, Neb.....	1904
TATNALL, SAMUEL A., 503 Hansberry St., Philadelphia, Pa.....	1916
TAYLOR, ALEXANDER R., 1410 Washington St., Columbia, S. C.....	1907

TAYLOR, HORACE, 3 Netherlands Rd., Brookline, Mass.....	1917
TAYLOR, LIONEL E., Bankhead, Kelowna, B. C.....	1913
TAYLOR, Dr. WALTER P., 1428 Perry Place, N. W., Washington, D. C.....	1916
TAYLOR, WARNER, 419 Sterling Court, Madison, Wis.....	1916
TERRILL, LEWIS McI., 44 Stanley Ave., St. Lambert, Quebec.....	1907
THOMAS, Miss EMILY HINDS, Bryn Mawr, Pa.....	1901
THOMPSON, J. WALCOTT, 527 East First South St., Salt Lake City, Utah.....	1916
THORNE, GERALD, 334 N. 5 E. St., Logan, Utah.....	1917
THORNS, Miss JULIA A., care Dr. D. H. Hill, Raleigh, N. C.....	1916
TILTON, Miss MABEL THURSTON, Vineyard Haven, Mass.....	1918
TINKER, ALMERIN D., 631 Haven Ave., Ann Arbor, Mich.....	1907
TOWNE, Miss ANNIE FLORENCE, Topsfield, Mass.....	1918
TOWNSHEND, HENRY HOTCHKISS, 69 Church St., New Haven, Conn.....	1915
TREGANZA, A. O., 614 E. 6th St., Salt Lake City, Utah.....	1906
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....	1899
TRUESDELL, JOHN F., 230 Post Office Bldg., Denver, Colo.....	1918
TRULL, HARRY S., 317 East 196th St., New York, N. Y.....	1917
TRUMBELL, J. H., Plainville, Conn.....	1907
TUDBURY, WARREN C., 925 Modoc St., Berkeley, Cal.....	1903
TUTTLE, HENRY EMERSON, Lake Forest, Ill.....	1909
TWITCHELL, A. H., Flat, Alaska.....	1918
TYLER, JOHN G., Turlock, Cal.....	1912
UFFORD, Dr. EUGENE U., 221 Central St., Auburndale, Mass.....	1918
UNDERWOOD, WM. LYMAN, Mass. Inst. of Tech., Cambridge, Mass.....	1900
VALENTINE, Miss ANNA J., Bellefonte, Pa.....	1905
VALLANDINGHAM, Miss KATIE, 811 Highland Ave., Carrollton, Ky.....	1918
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....	1895
*VANDERGRIFT, S. H., 311 Riggs Bldg., Washington, D. C.....	1918
VAN NAME, WILLARD G., Am. Mus. Nat. History, New York, N. Y.....	1900
VETTER, Dr. CHARLES, 67 West 12th St., New York, N. Y.....	1898
VIERECH, HENRY L., Biological Survey, Washington, D. C.....	1916
VISHER, Dr. STEPHEN S., Univ. Indiana, Bloomington, Ind.....	1904
VORHIES, Dr. CHAS. T., Univ. of Ariz., Tucson, Ariz.....	1918
WADSWORTH, CLARENCE S., 27 Washington St., Middletown, Conn.....	1906
WALKER, ERNEST P., Wrangell, Alaska.....	1918
WALKER, GEO. R., R. D. 3, Murray, Utah.....	1909
WALLACE, CHAS. R., 69 Columbus Ave., Delaware, Ohio.....	1913
WALLACE, JAMES S., 12 Wellington St., E., Toronto, Ontario.....	1907
WALTER, Dr. HERBERT E., 67 Oriole Ave., Providence, R. I.....	1901
WALTERS, FRANK, 125 23rd St., Elmhurst, N. Y.....	1902
WARD, FRANK H., 18 Grove Place, Rochester, N. Y.....	1908
WARD, HENRY L., 520 Lake Drive, Milwaukee, Wis.....	1906
WARNER, EDWARD P., Mass. Inst. of Technology, Cambridge, Mass.....	1910
WATSON, JAMES D., 6042 Harper Ave., Chicago, Ill.....	1917

WEBER, J. A., Moore and Grand Aves., Leonia, N. J.....	1907
WEBSTER, DR. GEORGE A., 419 Boylston St., Boston, Mass.....	1916
WEBSTER, MRS. JENNIE E. B., 44 East 23rd St., New York, N. Y....	1917
WEEKS, REV. LEROY TITUS, Emmetsburg, Iowa.....	1918
WEISEMAN, T. WALTER, 226 Beaver Road, Emsworth, Pa.....	1916
WEISER, CHARLES S., 105 W. Springettsbury Ave., York, Pa.....	1916
*WELLMAN, GORDON B., 54 W. Beltran St., Malden, Mass.....	1908
WETMORE, MRS. EDMUND H., Babylon, N. Y.....	1902
WEYGANDT, DR. CORNELIUS, 6635 Wissahickon Ave., Philadelphia, Pa.....	1907
*WHARTON, WILLIAM P., Groton, Mass.....	1907
WHEELER, JOHN B., East Templeton, Mass.....	1917
WHEELER, MRS. JAS. W., 403 15th Ave., N. Seattle, Wash.....	1918
WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.....	1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Canada.....	1903
WHITE, W. A., 14 Wall St., New York, N. Y.....	1902
WHITTLE, CHARLES L., 10 Channing St., Cambridge, Mass.....	1916
WHITTLE, MRS. H. G. Peterboro, N. H.....	
WIEGMANN, DR. WILLIAM HENRY, 436 East 5th St., New York, N. Y....	1916
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....	1895
WILCOX, CAPT. T. FERDINAND, 118 E. 54th St., New York, N. Y....	1895
WILEY, MISS LENA CATHARINE, Buckland, Mass.....	1918
WILLARD, BERTEL G., 1619 Massachusetts Ave., Cambridge, Mass....	1906
WILLARD, FRANK C., Farmingdale, N. Y.....	1909
WILLCOX, PROF. M. A., 63 Oakwood Road, Newtonville, Mass.....	1913
WILLIAMS, MISS BELLE, Colonia Hotel, Columbia, S. C.....	1915
WILLIAMS, ENRIQUE RUIZ, Reporto Almendarez, Marianao, Cuba....	1918
WILLIAMS, ROBERT S., N. Y. Botanical Gardens, New York, N. Y....	1888
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILLIS, MISS CLARA L., 72 Main St., Framingham Center, Mass....	1915
WILMOT, NELSON E., 24 New St., West Haven, Conn.....	1916
WILSON, MRS. E. S., 2 Clarendon Ave., Detroit, Mich.....	1917
WING, DEWITT C., 5344 Dorchester Ave., Chicago, Ill.....	1913
WINGARD, TODD ALBERT, 1929 Park Rd., Washington, D. C.....	1918
WOLFE, PATRICK R., 1129 Tinton Ave., New York, N. Y.....	1917
WOOD, LIEUT. COL. CASEY A., 7 W. Madison St., Chicago, Ill.....	1917
WOOD, GEORGE B., 129 S. 18th St., Philadelphia, Pa.....	1916
WOOD, MRS. N. P., Northfield, Mass.....	1917
WOOD, NELSON R., Smithsonian Institution, Washington, D. C....	1895
WOODRUFF, FRANK M., Acad. of Sciences, Lincoln Park, Chicago, Ill.	1894
WOODRUFF, LEWIS B., 14 E. 68th St., New York, N. Y.....	1886
WOODWARD, DR. LEMUEL, 52 Pearl St., Worcester, Mass.....	1917
WORCESTER, MRS. ALFRED J., 314 Bacon St., Waltham, Mass.....	1908
WRIGHT, DR. ALBERT H., Cayuga Heights, Ithaca, N. Y.....	1906

* Life Associate.

WRIGHT, FRANK S., 14 Cayuga St., Auburn, N. Y.....	1917
WRIGHT, Miss HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.....	1907
WRIGHT, HORACE WINSLOW, 107 Pinckney St., Boston, Mass.....	1902
WYMAN, LUTHER E., 3927 Wisconsin St., Los Angeles, Cal.....	1907
YOUNG, Rev. CHAS. JOHN, Brighton, Ont., Canada.....	1918
YOUNG, Major JOHN P., 1510 5th Ave., Youngstown, Ohio.....	1911
ZIMMER, J. T., Dept. of Agriculture, Port Moresby, British Papua...	1908

DECEASED MEMBERS.

FELLOWS.

	<i>Date of Death</i>
ALDRICH, CHARLES.....	March 8, 1908
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BEAL, FOSTER ELLENBOROUGH LASCELLES.....	Oct. 1, 1916
BENDIRE, CHARLES EMIL.....	Feb. 4, 1897
COOKE, WELLS WOODBRIDGE.....	March 30, 1916
COUES, ELLIOTT*.....	Dec. 25, 1899
ELLIOT, DANIEL GIRAUD*.....	Dec. 22, 1915
GOSS, NATHANIEL STICKNEY.....	March 10, 1891
HOLDER, JOSEPH BASSETT.....	Feb. 28, 1888
JEFFRIES, JOHN AMORY.....	March 26, 1892
McILWRAITH, THOMAS.....	Jan. 31, 1903
MEARNS, EDGAR ALEXANDER.....	Nov. 1, 1916
MERRILL, JAMES CUSHING.....	Oct. 27, 1902
PURDIE, HENRY AUGUSTUS.....	March 29, 1911
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN MAYNARD.....	Jan. 28, 1887

RETIRED FELLOWS.

BELDING, LYMAN.....	Nov. 22, 1917
GILL, THEODORE NICHOLAS.....	Sept. 25, 1914

HONORARY FELLOWS.

BLANFORD, WILLIAM THOMAS.....	June 23, 1905
BARBOZA DU BOCAGE, JOSÉ VICENTE.....	July —, 1908

* Presidents of A. O. U.

Deceased Members.

xxxix

BERLEPSCH, HANS VON.....	Feb. 27, 1915
BURMEISTER, KARL HERMANN KONRAD.....	May 1, 1891
CABANIS, JEAN LOUIS.....	Feb. 20, 1906
DRESSER, HENRY EELES.....	Nov. 28, 1915
FINSCH, FRIEDRICH HERMANN OTTO.....	Jan. 31, 1917
GÄTKE, HEINRICH.....	Jan. 1, 1897
GIGLIOLI, ENRICO HILLYER.....	Dec. 16, 1909
GODMAN, FREDERICK DuCANE.....	Feb. 9, 1919
GUNDLACH, JOHANNES CHRISTOPHER.....	March 17, 1896
GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, [KARL JOHANN] GUSTAV.....	Nov. 20, 1900
HARVIE-BROWN, JOHN ALEXANDER.....	July 26, 1916
HUME, ALLAN OCTAVIAN.....	July 31, 1912
HUXLEY, THOMAS HENRY.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE NEWBOLD.....	Jan. 17, 1895
MEYER, ADOLF BERNHARD.....	Feb. 5, 1911
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907
PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SAUNDERS, HOWARD.....	Oct. 20, 1907
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SCLATER, PHILIP LUTLEY.....	June 27, 1913
SEEBOHM, HENRY.....	Nov. 26, 1895
SHARPE, RICHARD BOWDLER.....	Dec. 25, 1909
TACZANOWSKI, LADISLAS [CASIMIROVICH].....	Jan. 17, 1890
WALLACE, ALFRED RUSSELL.....	Nov. 7, 1913

CORRESPONDING FELLOWS.

ALTUM, JOHANN BERNARD THEODOR.....	Feb. 1, 1900
ANDERSON, JOHN.....	Aug. 15, 1900
BALDAMUS, AUGUSTE KARL EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS WRIGHT.....	Oct. 15, 1891
BLASIUS, [PAUL HEINRICH] RUDOLPH.....	Sept. 21, 1907
BLASIUS, WILHELM AUGUST HEINRICH.....	May 31, 1912
BOGDANOW, MODEST NIKOLAEVICH.....	March 16, 1888
BROOKS, WILLIAM EDWIN.....	Jan. 18, 1899
BRYANT, WALTER [PIERC]E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
BUTLER, EDWARD ARTHUR.....	April 16, 1916
COLLETT, ROBERT.....	Jan. 27, 1913

COOPER, JAMES GRAHAM.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
DUGÈS, ALFRED.....	Jan. 7, 1910
FATIO, VICTOR.....	March 19, 1906
GIRTANNER, GEORG ALBERT.....	June 4, 1907
GOELDI, EMIL AUGUST.....	July 5, 1917
HAAST, JOHANN FRANZ JULIUS VON.....	Aug. 16, 1887
HARGITT, EDWARD.....	March 19, 1895
HAYEK, GUSTAV EDLER VON.....	Jan. 9, 1911
HERMAN, OTTO.....	Dec. 27, 1914
HOLUB, EMIL.....	Feb. 21, 1902
HOMEYER, EUGEN FERDINAND VON.....	May 31, 1889
KNUDSEN, VALDEMAR.....	Jan. 8, 1898
KRUKENBERG, CARL FRIEDRICH WILHELM.....	Feb. 18, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEGGE, WILLIAM VINCENT.....	Mar. 25, 1918
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LILFORD, LORD (THOMAS LYTLETON POWYS).....	June 17, 1896
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MARSCHALL, AUGUST FRIEDRICH.....	Oct. 11, 1887
MIDDENDORFF, ALEXANDER THEODOROVICH.....	Jan. 28, 1894
MOSJISOVICS VON MOJSVAR, FELIX GEORG HERMANN AUGUST.....	Aug. 27, 1897
NORTH, ALFRED JOHN.....	May 6, 1917
OATES, EUGENE WILLIAM.....	Nov. 16, 1911
OUSTALET, [JEAN FRÉDÉRIC] ÉMILE.....	Oct. 23, 1905
PHILIPPI, RUDOLF AMANDUS.....	July 23, 1904
PRJEVALSKY, NICOLAS MICHAELOVICH.....	Nov. 1, 1888
PRENTISS, DANIEL WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND RICHARD VON.....	March 15, 1903
RAMSAY, EDWARD PIERSON.....	Dec. 16, 1916
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLYS-LONGCHAMPS, MICHEL EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, NICOLAS ALEKSYEVICH.....	Feb. 8, 1885
SHELLEY, GEORGE ERNEST.....	Nov. 29, 1910
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, HENRY BAKER.....	March 8, 1906
WHARTON, HENRY THORNTON.....	Sept. —, 1895
WOODHOUSE, SAMUEL WASHINGTON.....	Oct. 23, 1904

MEMBERS.

BAGG, EGBERT.....	July 12, 1915
BROWN, HERBERT.....	May 12, 1913
CAMERON, EWEN SOMERLED.....	May 25, 1915

Deceased Members.

xli

FANNIN, JOHN.....	June 20, 1904
HARDY, MANLY.....	Dec. 9, 1910
JUDD, SYLVESTER DWIGHT.....	Oct. 22, 1905
KNIGHT, ORA WILLIS.....	Nov. 11, 1913
MILLER, OLIVE THORNE (Mrs. Harriet Mann Miller)....	Dec. 25, 1918
PENNOCK, CHARLES JOHN (disappeared).....	May 15, 1913
RALPH, WILLIAM LEGRANGE.....	July 8, 1907
TORREY, BRADFORD.....	Oct. 7, 1912
WHITMAN, CHARLES OTIS.....	Dec. 6, 1910

ASSOCIATES.

ADAMS, CHARLES FRANCIS.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK TALLANT.....	Feb. 6, 1907
ATKINS, HARMON ALBRO.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, BERT HEALD.....	June 22, 1917
BAILEY, CHARLES E.....	—, 1905
BAIRD, LUCY HUNTER.....	June 19, 1913
BANKS, MISS MARTHA BURR.....	Dec. 13, 1917
BARLOW, CHESTER.....	Nov. 6, 1902
BATTEN, GEORGE.....	Feb. 16, 1918
BAUR, GEORG [HERMANN CARL LUDWIG].....	June 25, 1898
BECKHAM CHARLES WICKLIFFE.....	June 8, 1888
BERIER, DELAGNEL.....	Feb. 11, 1916
BETTS, NORMAN DEWITT.....	May 21, 1917
BILL, CHARLES.....	April 14, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 28, 1901
BOARDMAN, GEORGE AUGUSTUS.....	Jan. 11, 1901
BODINÉ, DONALDSON.....	Aug. 26, 1915
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER HODGES.....	Jan. 5, 1900
BRANTLEY, WILLIAM FOREACRE.....	Sept. 9, 1914
BREESE, WILLIAM LAWRENCE.....	Dec. 7, 1888
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	Mar. 21, 1907
BROKAW, LOUIS WESTEN.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BROWNSON, WILLIAM HENRY.....	Sept. 6, 1909
BURKE, WILLIAM BARDWELL.....	April 15, 1914
BURNETT, LEONARD ELMER.....	March 16, 1904
BUTLER [THOMAS] JEFFERSON.....	Oct. 23, 1913
BUXBAUM, MRS. CLARA E.....	March 23, 1914

CAIRNS, JOHN SIMPSON.....	June 10, 1895
CALL, AUREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, JOSEPH BUCKINGHAM.....	Feb. 18, 1904
CARLETON, CYRUS.....	Nov. 15, 1907
CARTER, EDWIN.....	Feb. 3, 1900
CARTER, ISABEL MONTIETH PADDOCK (MRS. EDGAR N. CARTER)	Sept. 15, 1907
CHADBOURNE, ETHEL RICHARDSON (MRS. ARTHUR PATTERSON CHADBOURNE).....	Oct. 4, 1908
CHARLES, FRED LEMAR.....	May 6, 1911
CLARK, JOHN NATHANIEL.....	Jan. 13, 1903
COE, WILLIAM WELLINGTON.....	April 26, 1885
COLBURN, WILLIAM WALLACE.....	Oct. 17, 1899
COLLETT, [COLLETTE] ALONZO MCGEE.....	Aug. 22, 1902
CONANT, MARTHA WILSON (MRS. THOMAS OAKES CONANT).....	Dec. 28, 1907
CONKLIN, CHARLES EDGAR.....	Sept. 8, 1916
CORNING, ERASTUS JR.....	April 8, 1893
DAFFIN, WILLIAM H.....	April 21, 1902
DAKIN, JOHN ALLEN.....	Feb. 21, 1900
DAVIS, SUSAN LOUISE (MRS. WALTER ROCKWOOD DAVIS).....	Feb. 13, 1913
DAVIS, WALTER ROCKWOOD.....	April 3, 1907
DEXTER, [SIMON] NEWTON.....	July 27, 1901
DODGE, JULIAN MONTGOMERY.....	Nov. 23, 1909
DUNLOP, ERIC BROOKE.....	May 19, 1917
DYCHE, LEWIS LINDSAY.....	Jan. 20, 1915
ELLIOTT, SAMUEL LOWELL.....	Feb. 11, 1889
FAIRBANKS, FRANKLIN.....	April 24, 1895
FARWELL, MRS. ELLEN SHELDON DRUMMOND.....	Aug. 6, 1912
FERRY, JOHN FARWELL.....	Feb. 11, 1910
FERRY, MARY BISSELL.....	March 18, 1915
FISHER, WILLIAM HUBBELL.....	Oct. 6, 1909
FOWLER, JOSHUA LOUNSBURY.....	July 11, 1899
FULLER, CHARLES ANTHONY.....	March 16, 1906
FULLER, TIMOTHY OTIS.....	Aug. 17, 1916
GESNER, ABRAHAM HERBERT.....	April 30, 1895
GOSS, BENJAMIN FRANKLIN.....	July 6, 1893
GRONBERGER, SVEN MAGNUS.....	April 24, 1916
HALES, HENRY TEASDEL.....	Nov. 6, 1913
HATCH, JESSE MAURICE.....	May 1, 1898
HAZARD, ROWLAND GIBSON.....	Jan. 23, 1918
HILL, WILLIAM HENRY.....	Oct. 14, 1913
HINE, MRS. JANE LOUISA.....	Feb. 11, 1916
HITCHCOCK, MRS. ELEANOR BECKWITH.....	March 3, 1917
HOADLEY, FREDERICK HODGES.....	Feb. 26, 1895

Deceased Members.

xliii

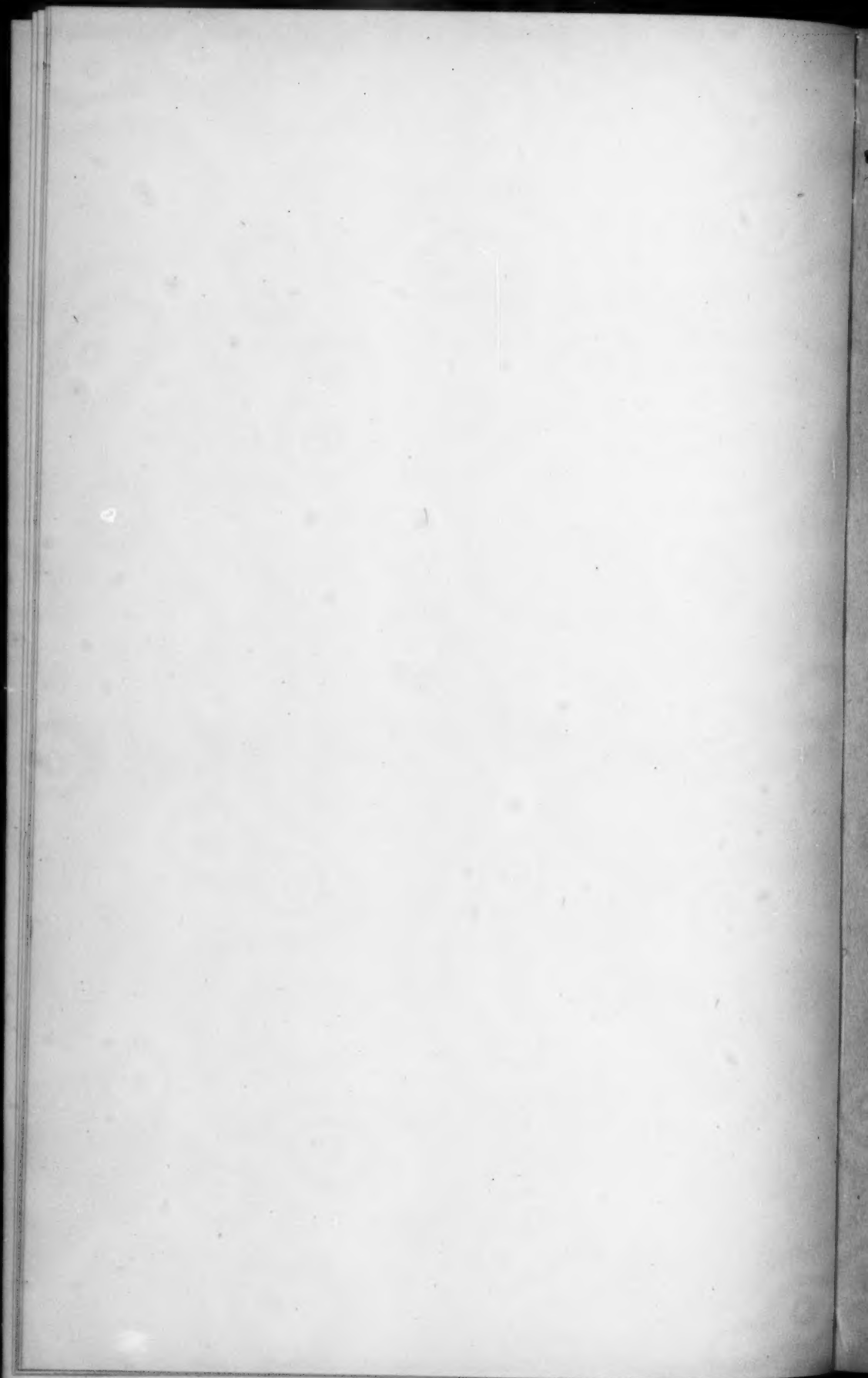
HOLMES, LaRUE KLINGLE.....	May 10, 1906
HOOPES, JOSIAH.....	Jan. 16, 1904
HOWE, FLORENCE AURELLA.....	July 9, 1913
HOWE, LOUISE.....	Sept. 13, 1912
HOWLAND, JOHN SNOWDEN.....	Sept. 19, 1885
HUBBARD, SARA ANDERSON.....	July 31, 1918
INGALLS, CHARLES EDWARD.....	May 31, 1917
INGERSOLL, JOSEPH CARLETON.....	Oct. 1, 1897
JENKS, JOHN WHIPPLE POTTER.....	Sept. 26, 1894
JEWEL, LINDSEY LOUIN.....	Sept. 5, 1915
JOUY, PIERRE LOUIS.....	March 22, 1894
JUSTICE, HENRY.....	March 1, 1918
KELKER, WILLIAM ANTHONY.....	Feb. 15, 1908
KNAPP, MRS. HENRY A.....	Spring, 1918
KNIGHT, WILBER CLINTON.....	July 28, 1903
KNOX, JOHN COWING.....	June 10, 1904
KÖCH, AUGUST.....	Feb. 15, 1907
KUMLIEN, LUDWIG.....	Dec. 4, 1902
KUMLIEN, THURE LUDWIG THEODOR.....	Aug. 5, 1888
LAKE, LESLIE WALDO.....	Feb. 7, 1916
LANTZ, DAVID ERNEST.....	Oct. 7, 1918
LATIMER, CAROLINE P.....	April 19, 1916
LAWRENCE, ROBERT HOE.....	April 27, 1897
LEE, LESLIE ALEXANDER.....	May 20, 1908
LEVY, WILLIAM CHARLESWORTH.....	July 5, 1914
LINDEN, CHARLES.....	Feb. 3, 1888
LLOYD, ANDREW JAMES.....	June 14, 1906
LORD, WILLIAM ROGERS.....	Feb. 2, 1916
MABBETT, GIDEON.....	Aug. 15, 1890
MABBOTT, DOUGLAS CLIFFORD.....	Sept. 15, 1918
MATTLAND, ALEXANDER.....	Oct. 25, 1907
MARBLE, CHARLES CHURCHILL.....	Sept. 10, 1900
MARCY, OLIVER.....	March 19, 1899
MARIS, WILLARD LORRAINE.....	Dec. 11, 1895
MARSDEN, HENRY WARDEN.....	Feb. 26, 1914
McEWEN, DANIEL CHURCH.....	Nov. 1, 1909
McHATTON, HENRY.....	April 22, 1917
McKINLAY, JAMES.....	Nov. 30, 1899
McMAHON, WALTER FREEMAN.....	Aug. 28, 1918
MEAD, GEORGE SMITH.....	June 18, 1901
MINOT, HENRY DAVIS.....	Nov. 13, 1890
MORRELL, CLARENCE HENRY.....	July 15, 1902
NICHOLS, HOWARD GARDNER.....	June 23, 1896
NIMS, LEE.....	March 12, 1903
NORTHROP, JOHN ISAAH.....	June 26, 1891

PARK, AUSTIN FORD.....	Sept. 22, 1893
PAULMIER, FREDERICK CLARK.....	March 4, 1906
POMEROY, GRACE VIRGINIA.....	May 14, 1906
POMEROY, HARRY KIRKLAND.....	Jan. 27, 1915
POWELL, MRS. S. W.....	1918
PUTNAM, FREDERIC WARD.....	Aug. 14, 1915
RAGSDALE, GEORGE HENRY.....	March 25, 1895
RAWLE, FRANCIS WILLIAM.....	June 12, 1911
READY, GEORGE HENRY.....	March 20, 1903
REED, CHESTER ALBERT.....	Dec. 16, 1912
RICHARDSON, JENNESS.....	June 24, 1893
ROBINS, JULIA STOCKTON (MRS. EDWARD ROBINS).....	July 2, 1906
SAND, ISABELLA LOW.....	April 20, 1906
SAVAGE, WALTER GILES.....	Aug. —, 1917
SELOUS, PERCY SHERBORN.....	April 7, 1900
SHANNON, WILLIAM PURDY.....	Oct. 29, 1916
SLATER, JAMES HOWE.....	Feb. 22, 1895
SLEVIN, THOMAS EDWARDS.....	Dec. 23, 1902
SMALL, EDGAR ALBERT.....	April 23, 1884
SMALL, HAROLD WESLEY.....	Mar. 12, 1912
SMITH, CLARENCE ALBERT.....	May 6, 1896
SMITH, RUTH COOK (MRS. H. A. HAMMOND SMITH).....	Jan. 2, 1912
SNOW, FRANCIS HUNTINGTON.....	Sept. 20, 1908
SOUTHWICK, JAMES MORTIMER.....	June 3, 1904
SPAULDING, FREDERICK BENJAMIN.....	Oct. 22, 1913
STANTON, JONATHAN YOUNG.....	Feb. 17, 1918
STONE, WILLARD HARRISON.....	March 15, 1895
STYER, KATHARINE REBECCA (MRS. J. J. STYER).....	Jan. 20, 1917
SWEIGER, HELEN BRONSON (MRS. JACOB L. SWEIGER).....	March 24, 1907
TAYLOR, ALEXANDER O'DRISCOLL.....	April 10, 1910
THOMPSON, MILLETT TAYLOR.....	Aug. 7, 1907
THORNE, PLATT MARVIN.....	March 16, 1897
THORNE, SAMUEL.....	July 4, 1915
THURBER, EUGENE CARLETON.....	Sept. 6, 1896
TWEEDY, EDGAR.....	Nov. 17, 1918
UPHAM, MARY CORNELIA (MRS. WILLIAM HENRY UPHAM).....	Nov. 29, 1912
VENNOR, HENRY GEORGE.....	June 8, 1884
WATERS, EDWARD STANLEY.....	Dec. 27, 1902
WALKER, ROBERT LATSHAW.....	Nov. 16, 1916
WELLES, CHARLES SALTER.....	Feb. 24, 1914
WHITE, JAMES CLARKE.....	Jan. 5, 1916
WILEY, LEO.....	Oct. 31, 1918
WILLARD, SAMUEL WELLS.....	May 24, 1887
WILSON, SIDNEY STEWART.....	Nov. 22, 1911
WINDLE, FRANCIS.....	Feb. 24, 1917

Deceased Members.

xlv

WISTER, WILLIAM ROTCH.....	Aug. 21, 1911
WOOD, JOHN CLAIRE.....	June 16, 1916
WOOD, WILLIAM.....	Aug. 9, 1885
WOODRUFF, EDWARD SEYMOUR.....	Jan. 15, 1909
WORTHEN, CHARLES KIMBALL.....	May 27, 1909
WRIGHT, SAMUEL.....	Jan. 18, 1917
YOUNG, CURTIS CLAY.....	July 30, 1902
ZAPPEY, WALTER REAVES.....	Feb. 20, 1914



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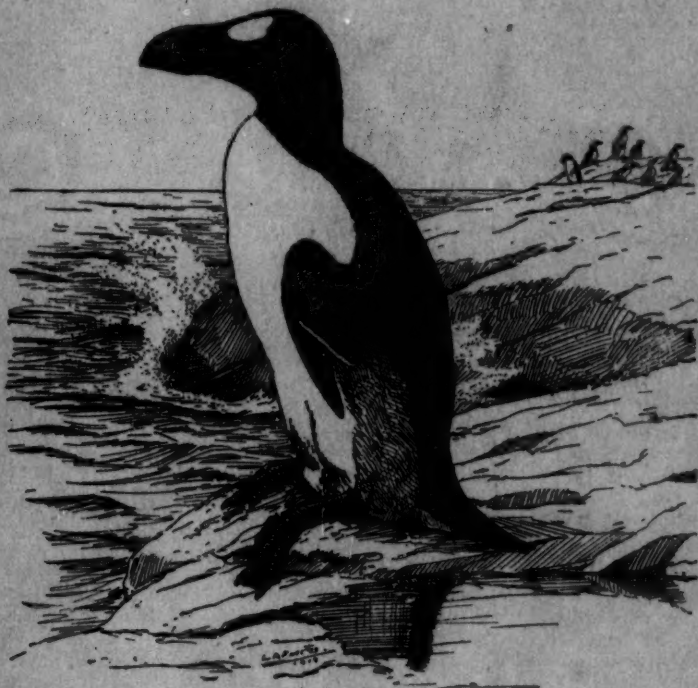
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Vol. XXXVI

JANUARY, 1919

No. 1



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The American Ornithologists' Union

CAMBRIDGE, MASS.

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CONTENTS

	PAGE
THE BIRDS OF THE RED DEER RIVER, ALBERTA. By P. A. Taverner. (Plates I-IV.)	1
THE HAWAIIAN ELEPAIO. By Vaughan MacCaughy	22
FURTHER NOTES ON NEW BRUNSWICK BIRDS. By P. B. Philipp and B. S. Bowditch (Plates V-VI.)	36
WINTER BIRDS OF EAST GOOSE CREEK, FLORIDA. By R. W. Williams	45
NOTES ON THE SUMMER BIRDS OF THE UPPER YUKON REGION, ALASKA. By Eliot Blackwelder	57
NOTES ON SOME BIRDS OF THE OKANAGAN VALLEY, BRITISH COLUMBIA. By J. A. Munro	64
DESCRIPTION OF A NEW SPECIES OF <i>PIRANGA HEPATICA</i> SWAINSON. By Harry C. Oberholser	74
NOTES ON NORTH AMERICAN BIRDS. VII. By Harry C. Oberholser	81
DESCRIPTION OF A NEW SEASIDE SPARROW FROM FLORIDA. By Arthur H. Howell	86
DESCRIPTIONS OF NEW BIRDS FROM SOUTH AMERICA. By Charles B. Cory	88
THIRTY-SIXTH STATED MEETING OF THE AMERICAN ORNITHOLOGISTS' UNION. By T. S. Palmer	90
GENERAL NOTES.—Further Notes on the "Fishy" Flavor of Birds, 100; Egrets (<i>Herodias egretta</i>) in Northern New Jersey, 101; Brooding Habit of the American Coot, 102; Stilt Sandpiper (<i>Micropalama himantopus</i>) in Wyoming, 102; Notes on Migratory <i>Anatina</i> and <i>Limicola</i> from Western New York, 102; Spring Shore-birds in Connecticut, 104; Killdeer (<i>Oxyechus vociferus</i>) Nesting in West Haven, Conn., 105; Mourning Doves Sharing a Robin Roost, 106; Duck Hawks Wintering in the Center of Philadelphia, 108; A Note of the Long-eared Owl (<i>Asio wilsonianus</i>), 109; The Short-eared Owl in Massachusetts in Summer, 109; On <i>Brologeria ferrugineifrons</i> Lawrence, 110; Arctic Three-toed Woodpecker (<i>Picoides arcticus</i>) at Belmont, Mass., 110; The Song of the Blue Jay, 111; The Aesthetic Sense in Birds as Illustrated in the Crow, 112; Proper Name of the Tree Sparrow, 114; The Rose-breasted Grosbeak in Connecticut in November, 114; Zamelodia versus Hedymeles, 115; Rough-winged Swallow, Unusual Nesting Sites, 115; Late Nesting of the Red-eyed Vireo in Detroit Mich., 115; Local Decrease of Warblers in 1917, 116; The Name "erythrogaster," and Others, 116; Waterton on Bird Song, 118; Correction, 118.	
RECENT LITERATURE.—Beebe's 'Monograph of the Pheasants,' 119; Leo Miller's 'In the Wilds of South America,' 125; Van Coot's Birds of the Netherlands, 127; Mathews' 'The Birds of Australia,' 129; Beebe's 'Jungle Peace,' 130; Riley on a Collection of Birds from Northeastern Siberia, 131; Shufeldt on the Skeleton of the Kea Parrot, 131; Murphy's Photographs of South Georgia Birds, 132; Taverner's Recent Papers on Canadian Birds, 132; 'Aves' in the Zoological Record, 133; Proceedings of the Linnæan Society of New York, 133; Annual Report of the National Association of Audubon Societies, 134; Zimmer on Rare Birds from Luzon and Mindoro, 135; Recent Papers by Wetmore, 135; Five Contributions to Economic Ornithology by Collinge, 136; Chapman's 'Our Winter Birds,' 137; The Ornithological Journals, 138; Ornithological Articles in Other Journals, 144; Publications Received, 144.	
CORRESPONDENCE.—Maggot Infested Birds, 147; Evolution of Bird Song, 149; Australia's Effort to Save her Bird Fauna, 151.	
NOTES AND NEWS.—Changes in the A. O. U. Check-List, 152; Obituary: Walter Freeman McMahon, 153; Douglas Clifford Mabbott, 153; Prof. David Ernest Lantz, 154; Check Lists, 155; Paintings of Extinct Birds, 157; Matthews Collection of Australian Birds, 157; Account of the A. O. U., 157; Retirement of W. Ogilvie-Grant, 157; The Ottawa Naturalist, 157; The Chicago Ornithological Society, 158; Paintings Illustrating Camouflage, 158; A Supplement to Townsend's 'Birds of Essex County' Mass., 158; Alleged Occurrence of Passenger Pigeons, 158; Called to the Colors, 158.	

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CAMP 11, LITTLE SANDHILL CREEK, ALBERTA.
Typical Erosion Effects.

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No. 1.

THE BIRDS OF THE RED DEER RIVER, ALBERTA.

BY P. A. TAVERNER.¹

Plates I-IV.

THE region about Red Deer and Calgary, Alta., has received the attention of several ornithological observers; but while individual notes and specimens from there are scattered through many publications and various collections no attempt has been made to correlate or bring them all together. During the summers of 1915 and 1916 the Geological Survey of Canada had parties collecting large fossils in the Edmonton and Belly River formations in the bad-lands of the Red Deer River. Incidental to this work Mr. George Sternberg of this museum collected a number of interesting birds. His account of the country and the ornithological specimens he secured, added to the fragmentary references in literature, proved so interesting that it was decided to make a more intensive ornithological investigation of the river during the summer of 1917.

June 18 found the writer and C. H. Young in Red Deer, where a rough scow-shaped boat was built, sixteen feet long and four and a half feet wide, capable of carrying ourselves and a comfortable amount of camp and collecting equipment. An outboard motor was attached and the descent of the river begun on June 25. While on the subject it may be well to state that this outfit was eminently

¹Published by permission of the Geological Survey, Ottawa, Ont.

satisfactory. The rather clumsy boat and low power motor while not adapted for navigating against the current were admirable for going with it, and had the trip to be made over again I know of no important detail that might be altered.

The river was at about mid-height. The high spring floods were past but the water had not reached its low summer level. No rapids of importance were encountered and in only two places was navigation more than mildly exciting. The first was the "Canyon," some twenty-five miles from Red Deer via the river, though only eight miles overland. The other was just above the Grand Trunk Pacific Railway crossing south of Alix between camps 3 and 4. We had heard from residents of the danger of these places and probably at certain stages of water they may be bad, but when we passed we found that the risk had been much exaggerated.

From Red Deer to Drumheller the river was usually deep and water could always be found for much deeper draught than ours. Occasional shallows occurred and islands divided the current, necessitating some care in choosing the proper channel. It was necessary also to put such a motor as we had on a hinge to avoid disaster when through misjudgment the wrong channel was taken and shallow water was unexpectedly encountered. A little above Drumheller and continuing below, the river widens and shallows and the bottom changes from boulder and gravel to sandy mud, forming shifting shoals between which the channel meanders confusingly, rendering navigation more complicated though mistakes were annoying rather than serious.

The whole valley of the river lies some 100 to 250 feet below the general prairie level. Above Nevis, Camp 4, it is comparatively narrow and bounded by simple hills, steep bluffs or rocky cliffs, usually as well covered with vegetation as the slope and age of exposure permits. The prairie begins close to the river at the verge of the first embankment and the ox-bow bends are well wooded. Below Nevis the aspect of the landscape changes considerably, bare, raw, freshly eroded exposures are the rule and bad-land conditions are assumed. The ox-bows are extensive gumbo flats with the woods confined to the river edge; otherwise bare bluffs rise straight from the water, or raw clay hills, striped horizontally with black coal seams, succeed each other as far as the eye

can reach, shaped by the elements into strange forms, gashed into gullies with sharp knife-edged buttresses between, or carved into domes and sugar loaf shapes. Between Camps 9 and 10 this sculpturing becomes more pronounced and stranger still. The domes are more conical, their sides steeper, vertical cliffs and sink-holes are more common and the sky line more ragged. Gothic cathedral outlines replace Byzantine domes and the landscape exhibits a confusion of buttressed spires and balanced rock-capped pinnacles.

The country about Red Deer is rolling prairie of varied and interesting aspect with considerable spruce bush covering the hills and following watercourses. On the river, as far as Nevis, spruce of considerable size is a conspicuous element in the vegetation, ascending the hills on either hand wherever root hold can be obtained, while the stream margin is well clothed with poplar, birch and willow. Below Nevis the spruce gets less common and smaller, and within a few miles further down exists only as small scrub covering the higher and colder slopes. Below Drumheller it ceases to exist at all. As the spruce gives out the cottonwood along the banks takes on a larger and stronger growth. Wherever the swing of the river has built up an alluvial plain the margins are well wooded for a hundred yards or so back from the water. Most of this is cottonwood and large trees with great rough trunks and spreading branches like grove-grown oaks occur commonly. The smaller shrubbery is largely saskatoon or willow and alder. This character of vegetation persists, except on the eroded banks, to near Steveston, Camp 10, below which the timber becomes smaller and scantier, and at our final Camp 11, even tent poles were difficult to find and sage brush and prickly pear cactus generally came down to the river banks.

The ecological conditions follow the physiographical aspects. About Red Deer and nearly to Nevis the river valley is mesophytic, while below drier conditions prevail, until at our last station, Camp 11, below Steveston, the raw bare landscape, scanty buffalo grass, sage brush and prickly pear cactus proclaimed the typical desert, except here and there on the narrow flood banks and in traces along the lower courses of occasional intermittent creeks.

The river valley as far as we followed it is practically unin-

habited. Here and there on the most promising of the wider bends little ranch establishments peep out of the wooded shores, but many of them in war time, alas, were closed and deserted, others seem to have been occupied only long enough to obtain legal homestead title, and only a few of them were occupied. Grazing is the principal industry in such places and most of the bush margin is traversed by cattle paths. However, though scarcely a soul was visible throughout most of the trip, we had only to climb to the prairie level to find some of the most fruitful and best cultivated lands in the Canadian west: so, though apparently traveling in the wilderness, we were really never far out of touch with settled communities. This was especially true and striking on the upper reaches and down as far as the Tolman Ferry, Camp 6, where we made our last excursion out of the valley. At the last camp, No. 11, when we finally left the river, the upper level conditions were rather different, and wide reaches of dry flat prairie dotted occasionally with bunches of cattle and horses and only suitable for cultivation by aid of the irrigation project of the Canadian Pacific Railroad met the eye from the river to the railroad at Millicent.

We left Red Deer June 25, arriving at Camp 11 near Steeveville, 217 miles below, July 19. This was the site of the Survey's palaeontological collecting camp under Mr. Chas. Sternberg and here C. H. Young remained until September 26, but the writer left for British Columbia July 21. During this trip, occupying about a month, no regular schedule was followed and we remained stationary or moved to the next location as local conditions suggested. The weather after the first day or two at Camp 1 was ideal for our work and we were even spared, by the seasonal conditions, serious trouble from mosquitoes that report had led us to expect to be bad. All who travel on the river do not escape so easily. Once or twice we camped too close to cattle herds and for our lack of foresight were vexed with flies. These were a more serious menace to our specimens than to us and our slow drying specimens of young raptores were seriously threatened by the pests. Careful screening of our drying trays however prevented further loss than the disfigurement of a few individual specimens.

Our first camp (No. 1) was made some twenty-seven miles below Red Deer, though only some 8-9 miles by road and just after we

passed the "Canyon." Here we remained until July 4, working the uplands as well as the valley, and obtained a fairly representative collection of the birds of the locality and an idea of the general conditions. Most species were breeding and all were very shy and retiring. We were further handicapped by being disinclined to take adults having families dependent upon them. This increased the work and limited practical results. From here on we made but short stops at varying distances and except at Camp 4, near Nevis, and at Camp 6, Tolman's Ferry, confined our attentions to the river valley itself.

At Camp 11, after the writer left, Young made a general survey of the locality, worked thoroughly all the surrounding territory within walking distance and made as complete a collection as possible. As he remained until the fall migrations were well under way he added many species to our list. His material is of exceptional interest as can be seen in the following annotations.

I have included in the list references to the collections made by Mr. Geo. Sternberg in 1915 and 1916 as well as some specimens collected by Mr. Chas. Horsbrough at Alix, in the vicinity of the upper river, besides occasional other notes from the same general locality. Those accredited to G. F. Dippie are cited, unless otherwise stated, from the 'Catalogue of Canadian Birds,' J. and J. M. Macoun, 1909. A good many specimens from this neighborhood are extant in various collections and should any reader of 'The Auk' have additional material or information I should be pleased to have it published as addenda to this list.

Since writing the above, a paper entitled 'Further Notes on the Birds Observed at Alix, Buffalo Lake and Red Deer, Alta., in 1915 and 1916' by Chas. B. Horsbrough, has appeared in 'The Ibis' for July 1918, pp. 417-496, giving annotations on ninety-five species and calling attention to a previous paper by the same author, 'Ornithological Notes from Alix and Buffalo Lake Districts, Alta., in 1914,' *Ibid.*, October, 1915, pp. 670-689, annotating eighty species. From these two lists much additional data has been extracted and a number of species added to our list. Mr. Horsbrough's rather free use of subspecific designations is a little disconcerting. In a few cases he has given his authority for his decisions but the majority are evidently made on geographical assumptions and hence whilst

most of his specific determinations can be confidently received I have not allowed his finer divisions to influence me. In this I am not wishing to criticise the writer personally, only the current system which he follows. As I may myself be called to task for sins of subspecific determination I wish to state that my decisions are based entirely upon the material in view and it is not the intention to cast reflections upon the conclusions of others or those based upon different material. I also wish to be judged by the letter of my statements and not upon inferences that may be read into them. Many of my conclusions are contrary to accepted authority, but in explanation I herewith quote from one whose authority can not be questioned and whose words though written in support of a somewhat opposite standpoint interpret my attitude much better than I can express it myself. The bracketed interpolations are mine,—“No doubt many of the forms which the author has [or has not] recognized as subspecies in the present work may [or may not] appear trivial [or important] to others, especially those who have not had the advantage of the material upon which they are based; but in all cases it has been the author's desire to express exactly the facts as they appear to him in the light of the evidence examined, without any regard whatever to preconceived ideas, either his own or others', and without consideration of the inconvenience which may result to those who are inclined to resent innovations, forgetful of the fact that knowledge can not be complete until all is known.”¹

The following is a schedule of the Camps which are referred to in the annotations. The fractional camp numbers in the text refer to occurrences en route between camps. Mileage is by the river as the boat traveled.

- Camp 1.— 25 Miles below Red Deer, June 25–July 4.
- Camp 2.— 30 Miles below Red Deer, July 4–5.
- Camp 3.— 37.65 Miles below Red Deer, July 5–6.
- Camp 4.— 55.80 Miles below Red Deer, the Pump-house near Nevis, July 6–9.
- Camp 5.— 83.40 Miles below Red Deer, Ross's Ranch, July 9–11.

¹ Robert Ridgway, *Birds of North and Middle America*, Vol. I, 1901, pp x-xi.



RED DEER RIVER BELOW NEVIS, ALBERTA.
Erosion on right, Alluvial Flats on left.

1880
1881
1882
1883
1884
1885
1886
1887
1888
1889
1890

- Camp 6.— 97.20 Miles below Red Deer, Tolman's Ferry, July 11–13.
- Camp 7.— 132.00 Miles below Red Deer, Drumheller, July 13–14.
- Camp 8.— 139.50 Miles below Red Deer, near Rosedale Mines, July 14–17.
- Camp 9.— 163.20 Miles below Red Deer, 31–20 below Drumheller, July 17–18.
- Camp 10.— 213.60 Miles below Red Deer, 1 mile above Steveville, July 18–19.
- Camp 11.— 217.50 Miles below Red Deer, 3 miles below Steveville, July 19–September 26.

1.* *Aechmophorus occidentalis*. WESTERN GREBE.— Two birds collected by Horsbrough, Buffalo Lake, near Alix Alta, June 1914, where he reports them breeding commonly. One of these, a female, is the form with slender recurved bill, once called Clarke's Grebe, *A. clarki*.

2.* *Colymbus holboëlli*. HOLBELL'S GREBE.— Three seen on Brock's Lake at Camp 1: a female taken contained an egg ready to lay. Seen also on small pond near Bullocksville with young and on small waters in vicinity of Nevis. Though lakes apparently admirably adapted to them were examined on the upper levels at Tolman Ferry, no birds were noted upon them. Horsbrough reports them rare on Buffalo Lake but common on many smaller waters.

3.* *Colymbus auritus*. HORNED GREBE.— A pair with nest containing a partially hatched brood was found on a small slough near Camp 1 and all collected. Only two seen thereafter at Camp 11 after the writer left, one juvenile being taken in extremely emaciated condition. This can probably be explained by the extremely muddy condition of the water preventing the bird from seeing its prey.

4.* *Colymbus nigricollis*. EARED GREBE.— We saw no Eared Grebe ourselves but we have a specimen taken by Charles Horsbrough at Buffalo Lake, near Alix, June 11, 1914. He mentions the species in neither of his lists.

5. *Podilymbus podiceps*. PIED-BILLED GREBE.— Horsbrough reports a pair breeding on a small pond near Alix and commonly on Buffalo Lake in 1914.

6. *Gavia immer*. COMMON LOON.— Reported as being occasionally seen on Brock's Lake, Camp 1, on whose shores we found the decomposed remains of a single specimen. Horsbrough does not regard it as common.

7.* *Larus delawarensis*. RING-BILLED GULL.— After July 8 at

* The asterisk denotes that specimens were taken or are in the collection of the Museum of the Geological Survey of Canada.

Camp 4 we saw occasional large gulls of the Ring-bill type but it was not until the 12th on a small lake near Tolman's Ferry that a specimen was secured and identified. It is an adult non-breeding male. The bill was yellow with dark spots on the mandibles not forming a complete ring. The inside of mouth was orange shading to bright red in throat and showing externally at the gape. Eye-ring vermilion. The legs and feet are clear chrome yellow instead of the greenish yellow that most of the written descriptions call for. It is not impossible that these prairie birds will be found to be distinguishable from the eastern race on the basis of leg coloration. Colored drawings of the soft parts were from the fresh specimen.

8.* *Larus franklini*. FRANKLIN'S GULL.—Seen almost daily in singles to occasional fairly large flocks as far as Camp 8½ July 17, after which they were observed less regularly. We found none breeding though we have downy young taken by Horsbrough at Mirror Lake, where he found large numbers of them in 1915. At Camp 11, July 27, Young collected a juvenile in an emaciated and starving condition, the only one seen there. From the remains found in the Duck Hawk nests we examined it was evident that Franklin's Gull is a favorable prey of that bird.

9. *Larus* sp. LARGE GULL.—Horsbrough received a report of Herring Gulls, *L. argentatus*, that formerly bred on Buffalo Lake, but does not personally substantiate it further than by recording the presence of a pair there June 2, 1914. These records may refer to the California Gull, *L. californicus*, or even *L. delawarensis*.

10. *Sterna* sp. TERN.—At the Pump House Camp 4 near Nevis, July 8, terns were seen but not taken and their identity, whether Common or Forster's, is problematical. Horsbrough records the Common Tern as breeding near Alix but does not mention Forster's.

11.* *Hydrochelidon nigra*. BLACK TERN.—A few seen about small lakes at Camp 1 and again at Tolman's Ferry. We have downy young taken by Horsbrough at Alix, 1915. He found them breeding commonly at Buffalo Lake.

12. *Phalacrocorax auritus*. DOUBLE-CRESTED CORMORANT.—Reported by Dippie at Buffalo Lake (1896?). Horsbrough mentions a bird, provisionally referred to this species, seen there May 20, 1915, and repeats reports of its breeding near Edmonton.

13. *Pelecanus erythrorhynchos*. WHITE PELICAN.—Though we saw no Pelicans we heard of them from several sources and Charles Sternberg reported seeing one at his camp on the Little Sandhill Creek, June 24.

14. *Mergus* sp. MERGANSER.—One was seen between Tolman's Ferry and Drumheller July 13. It was a female or juvenile and its species could not be determined.

15.* *Anas platyrhynchos*. MALLARD.—Quite common breeder on sloughs and ponds of the upper prairie level but less often seen on the river itself. Local residents near Red Deer speak with disdain of the locally

raised "green heads" saying that the migrants that come in the fall are a much finer race of birds and easily recognizable by their superior size.

16.* *Chaulelasmus streperus*. GADWALL.—An adult and brood of newly hatched young seen and four of the latter collected between Camps 4 and 5, July 9. Dippie found it common on Buffalo Lake in 1896 and Horsbrough reports nests in 1914.

17.* *Mareca americana*. BALDPATE.—At least two pairs observed on Brock's Lake near Camp 1, and a male collected, June 28. Horsbrough noted it near Alix and records nests at Buffalo Lake.

18.* *Nettion carolinense*. GREEN-WINGED TEAL.—Common and with young on some of the smallest sloughs on the prairie level but not often seen on the river itself. The only specimens obtained were flying juveniles at Camp 11, August 15 and 23 where Young reported them as not common.

19.* *Querquedula discors*. BLUE-WINGED TEAL.—Common on the lakes and sloughs on the prairie level but not seen often in the river valley. Specimens taken at Camps 1 and 11 August 24.

20.* *Spatula clypeata*. SHOVELLER.—Only seen at Camp 11 on the Little Sandhill Creek, August 17 and 18 when specimens were taken.

21.* *Dafila acuta*. PINTAIL.—This species did not seem to be very common. A female was seen swimming in the river between Tolman Ferry and Drumheller and acted as if it had young nearby. Young saw one large flock near the Little Sandhill Creek and took specimens of juvenile birds August 3 and 4. We have another specimen taken by Horsbrough at Buffalo Lake, May 1915, who records nests at Buffalo Lake and vicinity.

22.* *Marila marila*. GREATER SCAUP.—Though we did not specifically identify Greater Scaups we have one taken by Horsbrough, October 1915, at Alix, who reports nests at Buffalo Lake.

23.* *Marila affinis*. LESSER SCAUP.—Numbers of Scaups were seen on the ponds on the prairie level near Camp 1 and near Nevis. Most seen were males. The few females seen acted as if they had nests nearby but none were found. Our only specimen was taken at Camp 1 and is of this species. The Lesser Scaup is not mentioned by Horsbrough.

24.* *Marila valisineria*. CANVAS-BACK.—Two downy young in our collections taken by Horsbrough June 1914 at Buffalo Lake, who records several nests.

25.* *Clangula clangula*. AMERICAN GOLDEN-EYE.—The commonest duck on the upper river but not seen below Tolman's Ferry. The absence of the Golden-eye on the lower river is probably due to the lack of large timber supplying nesting holes. Most of the birds seen were females and it seems probable that the sexes separate before reproductive duties are finished. We surmise that the males might be found in numbers on the larger lakes in the vicinity. None were seen closely enough to detect Barrow's Golden-eye, though they were looked for carefully, and Horsbrough does not mention it. Our only adult specimen is a female and an undoubted American Golden-eye. Several broods of young were met with on the

river and on Brock's Lake near Camp 1. Near the latter place we were shown a hollow tree where the species was said to have nested. At Camp 4 near Nevis is a pump house supplying water to the railroad some several miles away. The engineer in charge told us that ducks frequently entered the attic of his dwelling quarters through an open stovepipe hole and made considerable scratching noise overhead. I climbed up into the space through a man-hole but saw no indication of a nest. Without doubt these must have been Golden-eyes that were attracted to the place but did not find it satisfactory. Our specimens include representatives of two downy broods and one adult taken on Brock's Lake, Camp 1, June 28 and downy young above Nevis, July 6.

26.* *Charitonetta albeola*. BUFFLEHEAD.—Two females with small broods were seen on Brock's Lake near Camp 1 and afterwards occasionally as far as Ross's Ranch, July 9. Young saw two at Camp 11, Little Sandhill Creek, September 14. Our specimens consist of downy young, Camp 1, June 28. Also adults and downy young from Buffalo Lake, taken by Horsbrough, June 21 and May and September 1914, who records several nests.

27.* *Oidemia deglandi*. WHITE-WINGED SCOTER.—White-winged Scoters were common on the river as far down as Camp 5. There were quite a number on Brock's Lake near Camp 1 and singles and small flocks and pairs were encountered here and there flying up or down the river. Both sexes were present in about equal numbers and a female taken on Brock's Lake July 2 contained an egg nearly ready for deposition. The residents, however, do not know of their nesting in the neighborhood and were as curious as to where they nested as we were. We have another specimen from Buffalo Lake, June 1915, taken by Horsbrough, who says they nest late in the season.

28. *Erismatura jamaicensis*. RUDDY DUCK.—Dippie reports finding eggs at Buffalo Lake, June 14, 1896, and Horsbrough also records a nest there.

29. *Chen hyperboreus*. SNOW GOOSE.—We heard of white geese being occasionally seen on the river but did not meet with any. Chas. Sternberg reports seeing one near the Little Sandhill Creek, June 2. This must have been a belated straggler. Horsbrough records both Greater and Lesser Snow Geese from Red Deer and Buffalo Lake respectively. He gives the length of the former as 27 inches but no further corroboration. He is probably mistaken in his diagnosis.

30.* *Chen rossi*. ROSS GOOSE.—Two specimens in our collections taken by Horsbrough, Buffalo Lake, September 26 and October 10, 1914. He does not mention the species in his lists.

31.* *Anser albifrons*. WHITE-FRONTED GOOSE.—We have a specimen in the museum collection taken by Dippie on the Red Deer River, Sept. 12, 1896. Horsbrough reports a specimen in October 1915.

32.* *Branta canadensis*. CANADA GOOSE.—A Mr. Krieger, upon whose land we camped at Camp 1, told us that geese used to nest on the



1



2

1. CAMP 1, NEAR RED DEER, ALBERTA.
2. NESTS OF CLIFF SWALLOWS AND PRAIRIE FALCON NEAR LITTLE SANDHILL
CREEK, ALBERTA.

clay banks in the immediate vicinity but have not done so for a number of years past. He further remarked that they are usually seen migrating high overhead and seldom come down into the river. Another Geological Survey party whom we met making a similar trip to ours under Dr. J. A. Allen of Edmonton, met two broods below Ross's Ranch. Between Camps 7 and 8 and 8 and 9 we met with nearly full grown families. When first seen they made for the shore along which they ran, trying to hide in the scanty bushes or in rock crevices. When routed out of these places or when they failed to find satisfactory concealment, they again took to the water and as none, not even the adults, could fly, they swam vigorously ahead of us, diving when we came too close. The female adult of one of these broods swam on ahead of us for several miles until the river widened enough to enable her to pass. The last seen of her she was paddling vigorously against the current endeavoring to rejoin her lost family, which were, by the way, sufficiently developed to be in little need of her care. Two specimens were taken, a nearly grown gosling and an adult female, July 17 and 18.

33. *Olor columbianus* (?). SWAN.—Both Mr. Krieger and Mr. Brock at Camp 1 informed us that swans were occasionally seen passing over but know of none being taken. Horsbrough repeats reports of occasional flocks near Alix and Haunted Lakes in April.

34.* *Botaurus lentiginosus*. AMERICAN BITTERN.—Mr. Brock near Camp 1, gave us a clear description of the Bittern in his neighborhood but it did not seem to be as common as would be expected amongst the numerous sloughs on the uplands and we did not note it until Young took a specimen August 22 at Camp 11 on the Little Sandhill Creek in the heart of the desert-like country. Horsbrough records nests at Buffalo Lake.

35. *Ardea herodias*. GREAT BLUE HERON.—Between Camps 3 and 4 and 9 and 10 single individuals were seen and followed from bend to bend for several miles before they circled back over the low bends and were lost. Young reports individuals in the vicinity of Camp 11, Little Sandhill Creek, August 14 and September 3. Horsbrough records only occasional birds and cites a couple of specimens.

36. *Grus mexicana* or *canadensis*. CRANE.—Inquiries about Camp 1 brought forth reports that a few years ago three cranes, "exceedingly good eating," were killed in the neighborhood, but our informants were not otherwise familiar with the species. Probably this refers either to the Sandhill or the Little Brown Crane which should migrate through this section. Horsbrough mentions seeing a crane of undetermined species May 4 at Alix.

37.* *Porzana carolina*. SORA RAIL.—Several Soras were seen in sloughs in the vicinity of Camp 1. Doubtless if we had worked adjoining ponds they would have been found throughout the country. Young took one near Camp 11 in a slough on the upper prairies near the Little Sandhill Creek.

38. *Fulica americana*. AMERICAN COOT.—Not seen by us, but Horsbrough records it as the commonest breeding bird on Buffalo Lake.

39. *Steganopus tricolor*. WILSON'S PHALAROPE.—Recorded near Innesfail by Wm. Geary, Oologist, XIV, 1897, p. 24, but not seen by us. A few were noted by Horsbrough at Alix, Buffalo Lake and Red Deer, and he found a nest at Alix.

40. *Recurvirostra americana*. AMERICAN AVOCET.—Horsbrough records a few breeding birds about Buffalo Lake.

41. *Gallinago delicata*. WILSON'S SNIPE.—Heard in their love flights, but not seen, as far down the river as Nevis. Young saw several and took specimens in the vicinity of Camp 11 on the Little Sandhill Creek, August 16. Horsbrough records nests at Buffalo Lake.

42. *Macrorhamphus griseus*. DOWITCHER.—Horsbrough records one taken at Buffalo Lake, August 22, referring it, probably incorrectly, to the western race, *M. g. scolopaceus*.

43. *Pisobia minutilla*. LEAST SANDPIPER.—July 8 at Camp 4 near Nevis six small waders were observed flying by but under circumstances that precluded specific identification. From the date they might as well have been late spring Semipalmated as early fall Least. Horsbrough records the latter as migrants at Buffalo Lake.

44. *Totanus melanoleucus*. GREATER YELLOW-LEGS.—Horsbrough records the species and says it frequently occurs with the Lesser Yellow-legs throughout the season at Alix and Buffalo Lake.

45. *Totanus flavipes*. LESSER YELLOW-LEGS.—Dippie thought they were breeding at Buffalo Lake in July 1896 and Horsbrough mentions them incidentally as occurring with the Greater in the same locality.

46. *Helodromas solitarius*. SOLITARY SANDPIPER.—A pair were seen on a small pool in an old ox-bow channel of the river near Nevis, Camp 4, July 6-9. Their strong reluctance to leave the immediate neighborhood and general actions were presumptive evidence of their breeding. I suspected the presence of young but could not verify it.

46.* *Catoptrophorus semipalmatus*. WILLET.—Just below Steveville and on the last few miles of our trip we saw three Willets on a mud bar in the middle of the river and collected two of them. They were both juveniles and could not be subspecifically determined. Dippie found young of Buffalo Lake, July 4, 1895, and Horsbrough records a nest there May 20, 1915.

47. *Bartramia longicauda*. UPLAND PLOVER.—Near Camp 1 a bird that we supposed to be of this species was seen and heard though not plainly enough to make certain identification. Mr. Brock, a local farmer, told us that two snipe-like birds bred in the vicinity besides the Spotted Sandpiper; a small one nesting in the swamps which we supposed to be Wilson's Snipe and a larger one on the uplands, laying a remarkably large egg. The latter is a quite suggestive description of this species. Horsbrough records a pair at Buffalo Lake.

49.* *Actitis macularia*. SPOTTED SANDPIPER.—Common all along the river and breeding everywhere. One bird on being flushed from her eggs flew into adjoining bushes and climbed about them in most unwaderlike style while complaining at our intrusion.

50. **Numenius americanus.** LONG-BILLED CURLEW.—Both Chas. and Geo. Sternberg who have had several seasons' experience on the Red Deer River have spoken of Curlews occurring in the late summer or early fall. July 22, when leaving, as I drove into Millicent I saw two or three Curlew flying in the distance. I refer them to this species on general probabilities. Horsbrough reports a sight record for the Hudsonian Curlew for Buffalo Lake, May 25, 1915, but does not mention the Long-bill. In western Alberta, the Hudsonian is most improbable.

51. **Charadrius dominicus.** GOLDEN PLOVER.—Horsbrough records two specimens sent him from Buffalo Lake, Oct. 11, 1916.

52.* **Oxyechus vociferus.** KILLDEER.—Not seen until August 23 at Camp 11, on the Little Sandhill Creek, where Young collected a single specimen from five seen. We have one downy young taken at Alix June 1915 by Horsbrough, who reports them common.

53. **Perdix perdix.** HUNGARIAN PARTRIDGE.—Horsbrough was informed that this species was introduced near Alix in 1909, but failed to survive to date (1914).

54.* **Bonasa umbellus.** RUFFED GROUSE.—Said to have been very common about Camp 1, a few years ago but now scarce. Though we found much excellent ground we met none in this neighborhood and only occasional ones elsewhere. The same agents that practically exterminated the Sharp-tails doubtless decimated this species. See that species for further discussion. At Camp 3 we saw and took one specimen; another was heard drumming at Camp 4 near Nevis. A brood of half grown young was met between Camps 5 and 6 and a single bird below Drumheller. Besides this specimen we have three birds from Ramsey and three from Morrin, taken by George Sternberg in 1915 and 1916. Of these but two birds are typical *umbelloides*, two cannot be distinguished from eastern *togata*, and the remainder are intermediate. *B. u. umbelloides* as it occurs on the Canadian prairies is a most unstable race and there is little satisfaction in attempting subspecific identification of individuals in these districts. The area of overlapping of the two races is very wide indeed. Horsbrough refers the local form to *togata* but has probably not compared specimens.

55. **Tympanuchus americanus.** PRAIRIE CHICKEN.—I have had the pleasure of examining a specimen of this species taken by Mr. Horsbrough in the vicinity of Red Deer Dec. 26, 1914, as he records. As it was unknown to local shooters it appears that this is the first specimen of the species for this locality and may be the forerunner of a permanent intrusion.

56.* **Pediocetes phasianellus.** SHARP-TAILED GROUSE.—This is the "prairie chicken," so called, of the Prairie Provinces, and as such is well known. They were said to have been exceedingly numerous on the Red Deer a few years ago but are very scarce now. Though we covered much ground where they were said to have been plentiful we saw none until late in July when Young collected four July 27 to September 13, in the neighborhood of the Little Sandhill Creek. We spoke to several residents

who were familiar with them and their tales tallied closely. First there were great numbers of the birds and then they disappeared suddenly and without apparent cause. Coincidentally numbers of "large gray hawks" and "big owls" appeared in the late fall and winter. Had the disappearance been principally due to overshooting, some birds would have been overlooked in the more out of the way localities; but, while the common report was that there had been little if any shooting on many parts of the river valley, the scarcity was general and we did not see a bird except as above. Correlated with the appearance of the raptores and the disappearance of the grouse of all kinds was the disappearance of the rabbits. It was the same story wherever we were in 1917: Shoal Lake, Manitoba; here on the Red Deer River; in British Columbia at Hazelton, and in Jasper Park, Alberta. In the last named place at least, overshooting cannot be blamed for the scarcity of grouse, as there is no shooting allowed there, and such small amount of poaching as might have taken place could not possibly have accounted for the almost total absence of birds. Also the widely scattered localities, practically all of central and western Canada, though perhaps less so in the mountains where heavy timber gives good cover, is suggestive of other causes than local shooting. I think it is evident that the occurrence of the well known rabbit disease that periodically decimates these rodents deprived the large raptores of their usual food and forced them to invade southern sections in unusual numbers and turn their attention to grouse. The Ruffed Grouse, living in the heavier timber where cover is better, suffered less than the more open country species. Without doubt when their usual food supply, the rabbit, is cut off, the large raptores constitute a serious destructive influence. It is an interesting study in the correlation of species and complicates the subject of game protection. All that seems possible to do under the circumstances is to encourage the killing of the large winter raptores, yet if this is carried too far the rabbit pests are likely to increase in normal years to a dangerous extent and in the present state of misinformation the ordinary farmer and shooter are likely to involve in destruction the useful species of *Buteo* and *Archibuteo*, birds that the prairie provinces cannot well spare. I will discuss them and their effects under the subject of Red-tail Hawk. Horsbrough refers his specimens to *campestris*, which is the geographical probability. The condition of plumage makes me unwilling to pronounce upon the subspecies.

57.* *Zenaidura macroura*. MOURNING DOVE.—Not very common. We heard of a pair breeding near Camp 1. One was heard the morning of July 10 at Ross's Ranch and another at Drumheller the 14th. One was noted the 18th above Steveville and one taken the next day between that village and Camp 11. Horsbrough records a single specimen from Buffalo Lake.

58.* *Cathartes aura*. TURKEY BUZZARD.—We saw the first Turkey Buzzards shortly after we entered the real Bad-lands above Camp 5, Ross's Ranch. From then on several or more were noted daily. At Camp 11

on the Little Sandhill we saw aggregations of a dozen to twenty a number of times. Specimens taken at this camp August 20 and September 4. Horsbrough does not mention the species about Alix or Red Deer.

59.* **Circus hudsonicus.** MARSH HAWK.—Occasional Marsh Hawks were seen from Camps 1 to 4 but were not common. About fifteen miles above Steveville a number of juveniles were seen, probably an original family not yet separated. After I left Camp 11 Mr. Young reports that Marsh Hawks became common. One day he saw a female carrying a Flicker for about a mile and a quarter when she dropped it to two young. On approaching and driving them away he found the Flicker still alive. Specimens taken August 6 and 10.

60.* **Accipiter velox.** SHARP-SHINNED HAWK.—Not very common as we descended the river, though Young says they were numerous after the middle of September at Camp 11, on the Little Sandhill Creek, where he observed them teasing Pigeon Hawks. We found a nest with five newly hatched young near Camp 1, June 25. It was in a spruce tree about twelve feet from the ground. These were taken, also several at Camp 11 on the Little Sandhill, August 27 to September 7. We also have an October specimen from Alix taken by Horsbrough, who also records nests at Red Deer.

61.* **Astur atricapillus.** AMERICAN GOSHAWK.—Between Camps 5 and 6, July 11, we saw a Goshawk cross the river ahead of us. Another was seen several times at Camp 8, near Rosedale Mines, and July 16 its nest containing three large downy young was found. It was about twenty feet up in a cottonwood in a slightly open spot in the bush. One was seen at Camp 11 on the Little Sandhill Creek, by Young, July 30. Besides the adult female and young above noted we have October and November specimens from Alix, taken by Horsbrough, and Mr. Edward Arnold informs me he has a set of eggs collected near Red Deer.

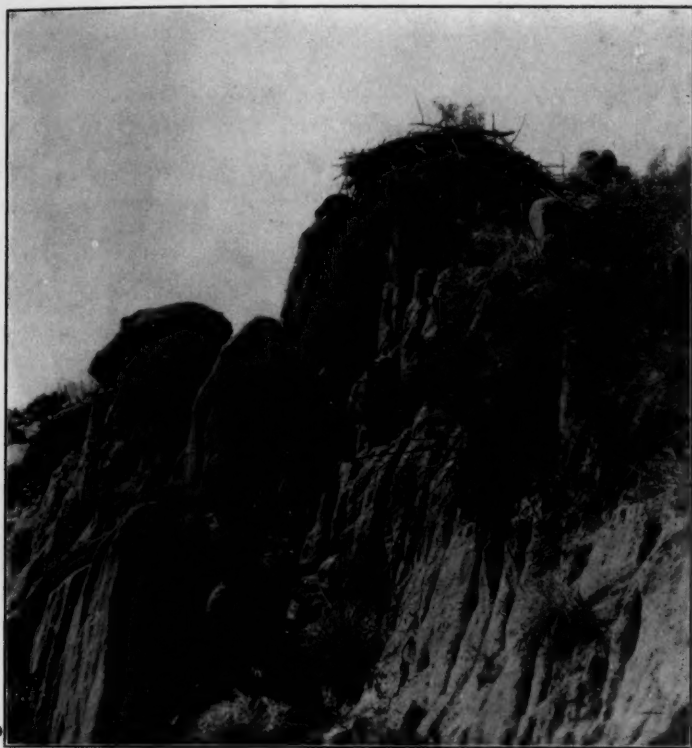
62.* **Buteo borealis.** RED-TAILED HAWK.—The most abundant Hawk on the river. It was seldom that one or more were not in sight and its nests dotted the larger trees every quarter of a mile or so to near Steveville. Near that village they grew fewer and finally disappeared and none were seen a few miles below at Camp 11 on the Little Sandhill Creek, in the midst of desert-like conditions. An accurate estimation of their numbers was very difficult owing to the presence of Swainson's Hawks from which it was usually most difficult to distinguish them except in most characteristic plumages. They were not excessively wary and a fine series of both adults and nestlings in various stages was obtained; the young usually with at least one parent taken and sometimes both. Of the birds seen there was a great variety of plumage and colorations, all the way from solidly dark to very light, faded specimens. The dark extremes were rather the least common and, either apparently or actually, more wary, for in spite of serious endeavor we were unable to obtain them. Several were shot, but falling off on a long slant they were lost in dense bush and could not be found. There is therefore still some doubt as to the

identity of many of these birds and many may have been Swainson's instead of Red-tails. In all twenty-two specimens were taken. Of these, except for a very faint to pronounced barring of the tail, there is no constant character to separate them from eastern *borealis*. They average slightly darker on the under-parts but at least two birds are lighter here than typical eastern birds while several are indistinguishable in this respect. Many of the tails are very light, but new incoming plumage of richer coloration indicates that this is due to the bleaching power of the bright prairie sun and is an acquired and not an inherent character. Fading however does not account for all the lightness, as in some cases the feathers are mottled or suffused with white from the shaft outward. While this culminates in a female taken July 9, the half grown offspring of the same bird has a dark tail similar to eastern juveniles, while all other juveniles having enough tail to judge from, show appreciable amounts of intermixed red such as is not seen in eastern birds.

I was in hopes that we would find *krideri* occupying this desert-like country but was disappointed, as we procured nothing that could not be attributed to *calurus*. One interesting point observed was that like usually mated with like, a light bird generally had a similarly colored mate and vice versa. Only in one case did we definitely discover a very dark bird paired with a light one. We obtained the three young of this pair and while they are hardly sufficiently fledged to accurately determine the characters they would finally exhibit, they show considerable difference in color. One tends towards an almost uniformly dark bird while the other two have plain indications of cream colored breasts and throats. It is evident therefore that the darkness of plumage is a congenital condition and not assumed with age; also that there is often a large amount of red in the tails of many juvenile birds such as is never (?) shown in eastern specimens of comparable age.

Naturally the abdomens of all the adults taken in the midst of the breeding season were bare; the skin was thickened and rugose, covered with dry, horny, scab-like plates that peeled off while skinning, and now that incubation was over, seemed ready to shed naturally before the incoming down of the midsummer moult. In addition to this, however, the throats were similarly affected. The throat feathers were ragged, worn and thin, whilst the skin between was excessively warty, the prominences tending to clear yellow in color and similar in appearance to the wattles of gallinaceous birds. It suggests that the throat is used in incubation as well as the abdomen.

The value of these large Buteos to the farmers of the prairie provinces is incalculable. This applies equally to Swainson's Hawk and the Ferruginous Roughleg. The country is infested with gophers, mostly Richardson's *Spermophile* in the section we visited, but Franklin's and the 13-lined were also present. Upon these the large hawks seem to feed almost entirely and their great number must be a powerful check upon them. However,



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1. NEST OF FERRUGINOUS ROUGH-LEG, BELOW NEVIS.
2. RED DEER RIVER NEAR NEVIS, ALBERTA.

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this forms the subject of a separate publication,¹ and calls for no further treatment here.

63.* ***Buteo swainsoni*.** SWAINSON'S HAWK.—Much that has been said of the previous species especially as to food, can be applied to this. Through the upper part of our course down as far as Camp 4, near Nevis, it seemed less numerous than the Red-tails; below that point it was about equal to them, disappearing with them at the entrance to the desert-like lower bad lands. Owing to the great variety of plumage of these two large Hawks it was in most cases practically impossible to distinguish between them except when in most characteristic plumage. Usually a dark breast band indicates Swainson's Hawk but we saw many variations that made us doubt the absolute reliability of even this character. On the whole, I suspect that the dark phase was slightly more common in *swainsoni* than in *borealis*. The commonest type of coloration had such a breast band but they ran through a redder type with less conspicuous breast band to a nearly black bird on one hand and to light plumages similar to normal juvenile eastern Red-tails. We took twelve specimens in all including downy young. In nesting there was little difference that we observed, between these and Red-tails, though they were perhaps more prone to choose smaller isolated trees standing in the open, a location we did not see used by *borealis* at all.

64. ***Archibuteo lagopus*.** AMERICAN ROUGHLEGGED HAWK.—Horsbrough reports a few specimens on fall migration dates. Older literature includes nesting records for this and adjoining sections, but it is problematical whether they do not refer to the next species.

65.* ***Archibuteo ferrugineus*.** FERRUGINOUS ROUGH-LEG.—Though we recognized no Rough-legs as such on the upper river or before we passed Camp 4, near Nevis, the residents about Camp 1 spoke of "Chap Hawks" so called from the feathering of the legs. Just above Camp 4 in the top of a cottonwood we saw a very large old nest that aroused our curiosity and which we later attributed to this species. Below Nevis we had our first view of the species and from thence on it was very common, nesting on the tops of pinnacles and shelves of the bare eroded exposures and occasionally in trees. The nests were immense masses of coarse sticks and seemed to be added to and used year after year. Some nests seen about Camp 11 on the Little Sandhill Creek seemed to have been occupied for many years. One built upon a salient buttress of a cliff had increased with annual additions until it formed a mass of material twelve or fifteen feet high. The lower masses of the nest were rotten and merged into the original clay foundation whilst it grew fresher towards the top until the final layer was of this year's construction,—mostly sage-brush roots. In a little hollow adjacent to such a nest we found an accumulation of over a bushel of dried

¹The Hawks of the Canadian Prairie Provinces, in their Relation to Agriculture, by P. A. Taverner. Museum Bull. No. 28, Biol. Series No. 7, Geological Survey, Dept. of Mines, Ottawa, Aug. 1918.

bones, and scraps of gophers that had been devoured by successive generations of young Rough-legs. The first nest we found contained three nearly fledged young and was on the top of a pinnacle on a deeply eroded exposure some 150 feet up and overlooking the river at a distance of about a quarter of a mile. In clambering about to get the properly lighted view for a photograph the young became alarmed and started out on their first flight, continuing until they dropped into the river below. One alighted near the margin and scrambled ashore but the other two drifted down and last seen were caught in the rapids below and drawn under and out of sight.

The coloration of these birds was remarkably constant. Most were of the light type, pure white below and with ruddy barred legs. Dark individuals were uncommon and we took only one specimen. This is a completely dark individual, a juvenile, and both parents were seen. One was of normal light coloration and the other all dark. Another juvenile similar to the one taken accompanied the family. We have five specimens of our own taking besides twelve more taken by Geo. Sternberg near Ramsey and Morrin in 1915 and 1916. Of these a brood of three taken June 26 is composed of one all black specimen and two that are evidently developing into the normally light-colored form. It is evident that, like the Western Red-tail, age has nothing to do with the darkness of coloration in this species.

66. *Aquila chrysaetos*. GOLDEN EAGLE.—Horsbrough records fall and winter specimens from the vicinity of Red Deer.

67. *Haliaeetus leucocephalus*. BALD EAGLE.—Single Bald Eagles were seen between Camps 5 and 6 and 9 and 10. They were white-headed adults and easily identified. Horsbrough reports several specimens and gives a breeding record for the Buffalo Lake vicinity.

68. *Falco rusticolus*. GYRFALCON.—Under the heading of Gray Gyrfalcon, *F. r. rusticolus*, Horsbrough records the capture of a specimen at Camrose, Oct. 1915, and mentions another taken about the same time.

69.* *Falco mexicanus*. PRAIRIE FALCON.—Amidst the maze of gullies, pinnacles and strangely eroded hill shapes a short distance back from the river at Camp 11 on the Little Sandhill Creek we met a number of these birds. In all but color they are so like Duck Hawks that at a distance we confidently ascribed them to that species. At least two pairs had raised their broods near the camp and the nests were pointed out to us by Chas. Sternberg, who had marked them down before we arrived. Though in action and general habit similar to *peregrinus* the nests we saw were essentially different. In the first place they were rather solidly built structures of sticks or dead sage-brush roots; secondly they were in small natural caves of rather pronounced character, and finally they were at a considerable distance from the water, the immediate presence of which seems to be a necessity for the nesting site of the Duck Hawk. When we arrived on the scene the young had left the nest but a short time and were still in the vicinity and while full-fledged and apparently strong on the wing, they were under parental care. Between July 20 and August 31

eight specimens were secured including both adults and juveniles. The latter differ from the former in being more creamy yellow. After identifying these birds we realized that we had met them before on the river but had thought them to be light plumaged Duck Hawks. They were usually seen bathing in the shallows of the river shore. At least two were seen between Camp 8 and 9 and one just above Steveville; all in arid country.

70*. **Falco peregrinus.** DUCK HAWK.—Though several of the birds we ascribed to this species during the last days of our trip were probably Prairie Falcons, a number previously observed were Duck Hawks. Friends about Camp 1 spoke of what they called Stone Hawks that nested on the adjacent cliffs, and one morning from our tent we saw a Duck Hawk feinting or making actual attacks on a Red-tail along the high cliffs across the river. The latter hastily took refuge in a tree-top and assumed the defensive while the Duck Hawk circled about chattering loudly and making frequent dashes at it, though as far as we could see no blows actually struck home. Shortly the falcon retired to an observation point on the cliff near by and waited, but at the first movement of the *Buteo*, returned to the attack and again drove it into a tree-top. It was half an hour or more before the Red-tail was allowed to slip away on its business. Just above Camp 2, and it was this that largely decided our stop, we discovered what was probably the same bird. It flew about us screaming loudly and was much disturbed at our presence. Parts of the cliff were liberally sprinkled with excrement and we were confident that a nest was nearby. The next day's careful search, however, failed to reveal it and upon collection the bird itself proved to be a non-breeding female. As when first seen it had one primary feather shaft broken as if by a shot we concluded that its mate had been killed and it having been unable to find another in time for breeding, still lingered and took a proprietary interest in the site of its old eyrie. Between Camps 5 and 6 a nest was found containing three downy young and with both parents in evidence. We collected one of the nestlings. A few miles below this nest another was found containing four nearly grown young and one parent present. In endeavoring to get a photograph of nest and young the better grown nestling took fright and left the nest. It flew up the river for nearly a quarter of a mile and finally came down in the river but soon scrambled ashore where we added it to our collection. Both these nests were on ledges on cliffs overlooking the river. In fact every Duck Hawk nest I have so far seen has been overlooking water and usually with water washing the base of the cliff upon which it was situated. Little or no nesting material was used and the eggs were laid upon the bare shelf. About them were scattered remains of various birds, the most conspicuous among which were the wing feathers of Franklin's Gull which from this evidence seem to be the favorite quarry of the Duck Hawks of this section in the nesting season. There were no indications of mammal remains and I conclude that this noble bird prefers feathered to furred game.

71.* **Falco columbarius.** PIGEON HAWK.—This species was one of

the agreeable surprises of the trip. Throughout our descent of the river a close watch was taken for the species as it was hoped that Richardson's Merlin would be found. Birds were seen at a distance at Tolman's Ferry and Drumheller that were ascribed to this species but either the distance was too great or else the glimpse too fleeting to make positive determination, so up to the time of my leaving from Camp 11 we had no satisfactory record of the species. Shortly after I left Young began to find them quite numerous and to September 20, thirteen were taken. Of these but one was true *F. c. columbarius*, the remainder including 4 adult and 6 juvenile males and 2 juvenile females being typical *richardsoni*. We have also a male and female taken in June, in Cypress Hills, Saskatchewan; two more, probably an original pair from Edmonton taken by Spreadborough in May and a female with two downy young taken by Dippie near Calgary. It can be seen that in all we have a very good series of these birds, yet amongst them I can not see the slightest tendency towards *columbarius* and am strongly inclined to regard *richardsoni* as a true species bearing the same relation to *columbarius* as *Falco mexicanus* does to *F. peregrinus*. The oft repeated statements copied from earlier descriptions inferring that this is practically a single plumaged species are certainly incorrect. Males are distinct from females and adults from juveniles; and all are easily separated from *columbarius* in any plumage.

72.* **Falco sparverius.** AMERICAN SPARROW HAWK.—This species was not very common on the upper reaches of the river but as we descended we found them more and more numerous until at Camp 5, Ross's Ranch, there were at least four nests within three minutes' walk of our tent, and below, every suitable stub along the banks contained a nest. We noted them several times essaying the role of Kingbird and badgering large hawks that intruded upon their privacy.

73. **Pandion haliaëtus.** OSPREY.—At Camp 1, just below Red Deer, I saw a bird that, at the time, I was confident was this species but not meeting it again I had removed it from the list of verified species. However, Horsbrough reports information of a pair that, up to a few years ago, nested at Pine Lake some twenty-five miles southwest of Red Deer, the birds being last seen there April 26, 1915.

74.* **Asio wilsonianus.** LONG-EARED OWL.—Not noted by us but we have specimens taken by Geo. Sternberg at Morrin, October 1 and 8, 1916, and at Alix, September and October, 1914, by Horsbrough who records a nest at Buffalo Lake.

75.* **Asio flammeus.** SHORT-EARED OWL.—Young took one on the upper prairie level near Camp 11, on the Little Sandhill Creek, September 5. Besides this we have one from Alix, October 1914, taken by Horsbrough who also records a nest at Buffalo Lake.

76. **Scotiaptex nebulosa.** GREAT GRAY OWL.—According to W. Raine, Dippie secured a set of eggs in the Red Deer District, probably about 1896. This likely remains the extreme southern breeding record for the species.

77.* **Cryptoglaux acadica.** SAW-WHET OWL.— We have one specimen in our collection from Alix, December 1914, taken by Horsbrough.

78.* **Bubo virginianus.** GREAT HORNED OWL.— Nearly every one who supplied us with information spoke of the large numbers of Big Horned Owls present the previous winter. I am convinced that these were forced out of their usual winter haunts by the failure of the rabbit supply and are largely responsible for the dearth of Grouse of all kinds this year in the western provinces.

Just below Camp 8 near the Rosedale Mines we collected an adult male and a juvenile, probably its offspring. None were seen again until Young took an adult at Camp 11, on the Little Sandhill Creek, August 4. Besides these we have the following specimens from adjoining localities, three birds from Morrin and Sonema June 14 and September 24 and 25, 1915 and 1916, also one bird from Red Deer, an old mounted specimen taken at unknown date some years ago. Of these the Sternberg specimens and the two breeding specimens taken below Camp 8 are well marked *subarcticus*. The Camp 11, Little Sandhill Creek, specimen I regard as *pallescens* as accepted by the A. O. U. or *occidentalis* as defined by Oberholser's revision of the species. The Red Deer specimen is different from either, being an extremely red bird similar in general to a specimen from the mouth of the Salmon River, B. C., identified as *saturatus* by H. C. Oberholser but much redder than it or than any other specimen in our collection. Geographically the only thing it can be reasonably ascribed to is *saturatus* as is so understood by the A. O. U. list or *lagophonus* of Oberholser. This is undoubtedly a migrant from the mountains. *B. v. subarcticus* seems to be the breeding form while *pallescens* can be regarded either as a straggler from further south or an intergrade. The exact determination of these many Horned Owl forms is very difficult and hardly satisfactory when too great exactness is insisted upon. In the museum is a set of two eggs taken near Red Deer by Dippie, April 10, 1896. Horsbrough records *B. v. pallescens* as the breeding form in his first list and *subarcticus* in his second. Probably all breeding birds should be included in the latter form.

79.* **Surnia ulula.** AMERICAN HAWK OWL.— Though not seen by us we have specimens taken by Horsbrough at Alix October 19, 1914, and by Geo. Sternberg, October 17, 1916, at Morrin whilst Chapman in his Handbook cites a breeding record, Red Deer April 16, 18 (?) Horsbrough gives no breeding records but regards the species as common.

(To be concluded.)

THE HAWAIIAN ELEPAIO.

BY VAUGHAN MACCAUGHEY.

THERE is no other region in the world with an avifauna more remarkable or interesting than that of the Hawaiian Archipelago. In extraordinary endemism, specialization, and precinctivity, the Hawaiian bird life is without parallel. Due to the operations of various malign influences, the native forests and birds have greatly diminished within historic times. Many known species of plants, trees, and birds have become wholly extinct, and many others are on the verge of extinction. A time is speedily approaching in which the extinct avian species will exceed in number those still surviving.

The one indigenous forest bird that appears to successfully withstand the devastating influences of "civilization" is the Hawaiian Flycatcher or Elepaio.¹ This form is now the most abundant representative of the native woodland avifauna. In many regions it appears to be practically the sole survivor. A peculiar interest is therefore attached to this beautiful and familiar denizen of the mountain forests.

Although the literature relating to Hawaiian bird life is voluminous, most of it is inaccessible to the average ornithological worker. Moreover, there is nowhere in the literature a comprehensive and modern account of this most abundant of the Hawaiian birds. During a residence of ten years in the islands, the author has had occasion to visit all representative parts of the native forests, and has spent many months in actual field work. He has been particularly interested in field studies and in the ecologic view-point, rather than in taxonomy. The present paper embodies the results of his own field studies, the examination of museum material, and a summary of the literature. In so far as is known to the author, this is the only monographic account of the Hawaiian Elepaio.

¹ Vowels pronounced as in Latin.

Family.—The Old World Flycatchers, *Muscicapidae*, comprising about 60 genera and some 400 species, are represented in the Hawaiian avifauna by *Chasiempis* only. The family is common in Ethiopian, Indian, and Australian regions; several are Palearctic, and 4 or 5 reach Europe. The family is fairly abundant in the islands of the South Pacific, but in the central North Pacific is confined to the Hawaiian group.

Genus.—The genus *Chasiempis*, comprising all the Hawaiian species, was established by Cabanis in 1847 (*Archiv für Naturgeschichte* 1847:207). The members are true Flycatchers, with broad soft beaks, the gape of which is beset with long, strong, spreading bristles. The tarsus is characteristically long and slender. The first primary is about one-half as long as the second; the second is about one-fourth inch shorter than the third; the fourth, fifth, and sixth are equal and longest. The tail is about as long as the wing; the rectrices are pointed. The sexes are similar in size and plumage, but the juvenile plumages differ in many striking particulars from those of the adult birds.

Key to adult birds.—The specific status of the Elepaios for many decades was a subject of great perplexity to ornithologists, and led to extended discussions and controversies. The careful studies of such workers as Rothschild, Perkins, Wilson, and Bryan, have reduced the chaotic synonymy to order and conclusively demonstrated that there are three valid species,—one each for the islands of Kauai, Oahu, and Hawaii.

Much perplexity and confusion arose from the numerous intergrading plumage changes through which all the species pass before they reach maturity. The differences between the mature and juvenile birds have misled ornithologists to describe them under different names, so that as many as six or more species were recognized by some investigators, while others have referred all to a single species.

The adults of all three species are characterized by wing-coverts spotted with white; black or white or both on the throat; tail-coverts white; lower mandible dark. The adults of all species have the rump white; the young have the rump tawny. They not infrequently breed in quite immature plumages; there are numerous records of pairs, one white-rumped, the other rufous-

rumped. The following key is rewritten and modified from the excellent keys of Rothschild and Bryan.

- A. Upper-parts bluish-gray or smoky;
Kauai only. KAUAI ELEPAIO,
C. sclateri.
 - AA. Upper-parts brownish.
 - B. White tips of outer-tail-feathers
usually longer than .50 inch;
white tips and outer edgings of
secondaries neither wide nor
prolonged; Hawaii only. HAWAII ELEPAIO,
C. sandwichensis.
 - BB. White tips of outer-tail feathers
usually shorter than .50 inch;
white tips and outer edging of
secondaries quite pronounced;
Oahu only. OAHU ELEPAIO,
C. gayi.
- Key to juvenile birds.*—In all three species the wing-coverts of the young birds are spotted with tawny brownish-yellow (white in adults); throat brownish-yellow, without black or white; base of lower mandible light.
- A. Browner above, brownish-yellow of
throat and tail-coverts deeper;
head not so brownish-yellow;
Hawaii only. HAWAII ELEPAIO,
C. sandwichensis.
 - AA. Lighter, more brownish-yellow above,
throat and upper-tail-coverts
rusty brownish-yellow.
 - B. Occurs on Oahu only. OAHU ELEPAIO,
C. gayi. fig. 2.
 - BB. Occurs on Kauai only. KAUAI ELEPAIO,
C. sclateri. fig. 3.

Chasiempis sandwichensis (Gmel.) THE HAWAII ELEPAIO.

SYNONYMY — Sandwich Flycatcher; Spotted-winged Flycatcher; Brown-faced Flycatcher; *Muscicapa sandwichensis* Gm.; *Muscicapa sandwichensis* Lath.; *Muscicapa maculata* Gmel.; *Cnipolegus* sp. Sel.; *Eopsaltria* (*Chasiempis*) *Sandwichensis* Gray; *Eopsaltria* (*Chasiempis*) *maculata* Gray; *Chasiempis sandwicensis* Sel.; *Chasiempis sandwichensis* Finsch & Hartl.; *Chasiempis ridgwayi* Stejn.; *Chasiempis ibidis* Stejn.

PLUMAGE — There seems to be a tendency toward a differentiation into sub-species. According to Henshaw birds on the windward side of the island have forehead, lores and superciliary stripe *chestnut*; birds on the leeward side have these parts *white*. This has been confirmed by other collectors. There is no noteworthy difference in the plumage of the sexes. The following very detailed descriptions, which may be taken as typical for the group, have been revised and amended from the careful descriptions by Rothschild.

Final adult plumage: Forehead, lores, and superciliary stripe white or chestnut, more or less spotted, the bases of the feathers black.

Above, from the head to the back, dark olive-brown or bistre, tinged with rufous and spotted with white on the hind-neck and lower back.

Rump and upper-tail-coverts pure white, base of feathers black.

Wing-coverts (except primary-coverts) and inner secondaries black, broadly tipped with white. Primary coverts black. Quills blackish-brown, narrowly edged on the outer webs with olive-brown, distinctly edged with white on the inner webs, the first ones only at the basal parts.

Rectrices black, outermost pair with half of the outer web to the tip white, and with the tip of the inner web for $\frac{1}{4}$ to at least $\frac{1}{2}$ white.

The remaining tail feathers have a large portion of the inner web and a much smaller portion of the outer web white; these spots decreasing in size until the central pair is reached, where only quite narrow white tips are visible.

Feathers of the under-parts black at their bases, white at the tips. The chin remains quite black; then the white tips appear, so that the throat is varied white and black. The white tips become so broad that the entire lower throat, breast, abdomen, and under-tail-coverts are pure white.

Sides of the breast and body are more or less washed with tawny-olive. Under-wing-coverts spotted brown and white, the bases being deep brown, the tips broadly white. Feathers of the thighs black with white tips. Iris dark brown; upper mandible slaty-black, under mandible slaty-blue; legs and feet slaty-blue.

Intermediate plumage: Birds having this plumage may be adult and breed, but it is not the final plumage described above.

Above dark olive-brown with a rufous shade, thus appearing a trifle brighter than the final plumage.

Lores, forehead, and a more or less distinct line above and behind the eyes tawny brownish-yellow, sometimes mixed with whitish or white.

Rump and upper-tail-coverts white, the bases of the feathers black.

Quills dark brown, narrowly margined with pale tawny on the outer webs, with creamy buff on the inner webs, more so toward the bases. Secondaries tipped with white.

Rectrices broadly tipped with white, as in the final plumage, but the white color does not extend so far.

Chin and throat spotted black and white, in younger specimens appearing almost pure white. This variation is caused by the feathers being black at the base and more or less broadly tipped with white.

Under-parts below the throat dark tawny brownish-yellow, with a broad, more or less irregularly defined, white patch on the upper breast, and extending to the under-tail-coverts, which are also white. Feathers of the thighs black, tipped with white. Under-wing-coverts deep brown and white.

Iris, bill, legs and feet as in final plumage.

Juvenile plumage: Above tawny brownish-yellow. Pale tawny on rump, browner on head and upper-tail-coverts. Quills dark brown, with pale borders on outer webs and bordered with buff on inner webs.

Wing-coverts deep brown, broadly tipped with bright brownish-yellow buff.

Tail-feathers deep brown, with pale borders to the outer webs. Outermost pair with a small white spot on the outer web and a large white spot on the inner web; the next pairs with white on inner webs only. All these white spots are much less extended than in adult birds and decreasing in size to the middle, so that the central pair of feathers has no white.

Under-parts tawny buff, passing into white on middle of abdomen. Some specimens are much whiter than others. Under-wing-coverts buff.

Iris dark brown. Upper mandible deep brown; lower mandible brown at tip, creamy yellowish at base. Legs and feet slaty-blue, but less bright and paler than in adult birds.

Measurements of adults.

	inches		inches
Length.....	5.50-6.00	Bill, depth.....	.20
Wing.....	2.70-3.05	Bill, width.....	.18
Tail.....	2.40-2.70	Tarsus.....	0.85-0.90
Culmen.....	.47-.53	Toe.....	.63

Chasiempis gayi Wilson. THE OAHU ELEPAIO.

SYNONYMY — Gay's Flycatcher, Oahu Flycatcher; see also under 1.

PLUMAGE — *Adult male:* Upper-parts brownish (feathers with bluish bases), washed with tawny brownish-yellow, especially about the head.

Forehead rusty brownish-yellow. Lores and about the eyes white.

Wing-coverts brownish-black, forming a well-defined bar. Lesser coverts tipped less regularly with white. Primaries brown with buff edges. Tail-coverts white.

Chin white. Throat black with more or less white tips (not so conspicuous as in the Hawaii species). Breast with some reddish brown. Abdomen white.

Intermediate plumage: Similar to that of the young, but showing brownish-black in the throat, and more or less white in the wing and tip of tail.

Juvenile plumage: Above tawny yellowish-brown, most yellowish on sides and back of neck.

Forehead, lores, chin, throat and chest tawny brownish-yellow.

Wing-coverts and primaries brown with brownish-yellow edges. Larger wing-coverts sometimes showing white tips, forming a bar less conspicuous than in adults.

Upper-tail-coverts tawny-brownish-yellow. Under-tail-coverts tawny. Abdomen white.

The plumages of the female and young differ from the male in the same manner as those of the Kauai species.

The Oahu species is distinguished from that of Hawaii, with which it was long confused, by its more conspicuous white throat and almost entirely white breast. Seale has given an excellent account of the plumage changes of this species.

Measurements of adults.

	inches		inches
Length.....	5.50-6.00	Culmen.....	.40-.45
Wing.....	2.55-2.65	Tarsus.....	.95-1.00
Tail.....	2.50-2.55	Toe.....	.60

Oahu has been more completely despoiled of its native bird life than any other of the larger islands. More of the known Oahu passerine species are extinct than are living today. The Oahu Elepaio is the most abundant of the remaining native birds and is practically the only species commonly seen.

Chasiempis sclateri Ridgway. THE KAUAI ELEPAIO.

SYNONYMY — Dole's Flycatcher, Sclater's Flycatcher, *Chasiempis dolei* Stejneger. *A-peke-peke* is the designation used by the natives of Kauai for the rufous-rumped form; the white-rumped form is called Elepaio. The first name is used exclusively on Kauai.

PLUMAGE — *Adult male:* Upper-parts uniform dark smoky-gray. Lores and superciliary stripe whitish or buffy-white.

Wing-coverts blackish. Greater and lesser coverts tipped with white forming two fairly distinct bars across the wing. Quills blackish with grayish-fulvous edges tipped with white.

Upper-tail-coverts pure white.

Center of throat white surrounded by buffy and buffy-gray, forming a more or less distinct pectoral girdle. Sides of body grayish-white with a wash of rusty.

Abdomen and under-tail-coverts white.

White on outer web of tail-feathers narrow and extending along the edge for the greater part of its length; white tip about .35 inch long.

The throat and forehead of the adult female are much whiter than those of the adult male.

The young are very rufous above and chiefly orange-rufous below, with tawny-under-tail-coverts and rusty wing bars.

Measurements of adult.

	inches		inches
Length.....	5.25-5.50	Bill, depth.....	.16
Wing.....	2.55-2.95	Bill, width.....	.22
Tail.....	2.35-2.60	Tarsus.....	.80-.89
Culmen.....	.45-.50	Toe.....	.65

This species is abundant in all forested parts of the island; it was observed, mating and nesting, along the Na Pali coast.

The appearance, ranges, habitats, habits, calls and song, breeding habits, nests, eggs, and life-cycles of the three species, in so far as known, are so very similar in every respect that in the remaining sections of this paper, save where otherwise noted, they will be considered as ecologically a single form. Field observations fully warrant this point of view.

RANGE: The native passerine birds of the Hawaiian Islands fall into three groups, according to range. 1. Those which occur on all the main islands of the group. 2. Those which occur on several islands, but also are absent from several islands. 3. Those which are confined to a single island only, and (in many cases) to very limited areas on that island. The genus *Chasiempis* belongs to the second group; the species fall in group three.

The genus occurs on Kauai, Oahu, and Hawaii, and is absent from the islands of Niihau, Molokai, Maui, Lanai, and Kahoolawe. The absence from Niihau and Kahoolawe (the two smallest of the eight large islands), may be explained by deforestation; the primitive forest mantle has been wholly destroyed. Lanai and West Molokai have been largely denuded of forest. East Molokai and Maui, however, possess extensive forest belts closely resembling those of Kauai, Oahu, and Hawaii.

There is no evidence to show that the Elepaio has become

extinct on Molokai and Maui. On the contrary, the evidence is fairly conclusive that this form never inhabited the Molokai-Maui-Lanai-Kahoolawe land-unit. The present islands composing this unit are separated by channels less than 600 feet in depth, and originally constituted a single continuous land-mass. Isolation has taken place through subsidence.

Two theories are tenable concerning the inter-island distribution of *Chasiempis*. These theories also apply to many other Hawaiian organisms. According to one theory the primitive ancestor, from which *Chasiempis* evolved, landed upon the shores of one of the three islands which it now inhabits, as a chance immigrant or waif.¹ After a long period of time fortuitous inter-island migration occurred, which resulted in the chance establishment of the bird on Kauai, Oahu, and Hawaii, but in some unknown way missed the Maui-Molokai group. Through isolation the forms on the three islands developed as endemic species.

The second theory derives the three present species from an ancient stock which inhabited the primitive pan-Hawaii-land. This land, many times larger and higher than the present island-group, reached from northern Hawaii to and probably far beyond Niuhau, and has been lost through profound subsidence. The present islands are the apices of subsided mountains.² The primitive Elepaio ranged through pan-Hawaii-land and during subsidence was isolated on the three islands already mentioned. For some unknown cause it failed to continue on the Maui-Molokai unit.

The altitudinal range of *Chasiempis* on Kauai (5250 ft.) and Oahu (4040 ft.) is approximately from 800 ft. to the highest summits. Originally, when the forests covered much more of the lowlands than at present, and extended down to the strand in many districts, the Elepaio was abundant at the lower levels. On Hawaii (rising nearly to 14,000 ft.) the Elepaio ascends to the upper limits of the forest zone (7,000-9,000 ft.) and descends in certain places nearly to sea-level. It is most abundant between

¹ Just as a pair of Belted Kingfishers (*Ceryle alcyon*) landed and lived on the shores of Hawaii, several years ago.

² William Alanson Bryan, Deep Submergence of the Waianaeas. Vaughan MacCaughey, Outstanding biological features of the Hawaiian Archipelago.

1000 and 3000 on all the three islands. This wide altitudinal range, which embraces a number of climatic zones, is greater than that of any other native woodland bird, and strikingly indicates the versatility and generalized character of this bird.

Aside from the primitive inter-island or pan-Hawaiian migration the Elepaio does not give any evidence of migration. Within historic times the range has sensibly diminished. There are no observable migration movements within the present range of the species.

HABITAT: The Elepaio is essentially a bird of the humid and mesophytic forests, and is abundant in all parts of its range. It avoids such habitats as arid treeless sections, wind-swept summit ridges, and the very hygrophytic summit bogs, although even in the latter situations it sometimes occurs. It is most plentiful in the protected wooded ravines and on the valley slopes, especially in the somewhat open formations, where the sunlight penetrates, the humidity is not super-excessive, and insects abound.

Typical situations are the forests in the Waimea, Na Pali, and Hanalei districts of Kauai; the Waianae and Koolau Ranges of Oahu, especially in the Punaluu district; and the forests of Kona, Hamakua, and Kohala, Hawaii. The author has studied the species in all of these localities.

It ranges from the ground to the summits of the tallest trees (nearly 100 ft.) Its average elevation is 6-20 ft. from the ground in the shrubbery and tree-crowns. It is not a ground-loving bird, although it frequently descends to the ground in search of insects. The Elepaio, on the other hand, is not distinctive of the treetops, although when the *lehua* (*Metrosideros polymorpha*) is in bloom, the bird haunts the flowery crowns in quest of the insect visitors.

During an eight-weeks' pedestrian tour of the island of Hawaii the author noted the prevalence of the Elepaio in the extensive *koa* and *lehua* forests. In many regions the bird appears to be more abundant on the leeward than on the windward side of the island.

Next to the *lehua* the Elepaio's favorite haunt is probably the *mamake* (*Pipturus albidus*), because of the large insect fauna characteristic of that shrub. Seventy-five or more species of insects and their parasites have been reported as inhabiting the *mamake*; nine species are not known to occur on any other plant.

Food Habits.—The Elepaio is almost exclusively insectivorous. There is no evidence of vegetable food, save possibly nectar. In its feeding habits it combined the traits of the Flycatcher and the Wren, with strong resemblance to the latter. It catches insects in three ways,—on the wing, from vegetation, and from the ground. It often follows and catches insects on the wing, but does not sit for long intervals and watch for prey, as do the American Flycatchers. In its aerial chase the Elepaio's beak snaps audibly in closing. The author has often sat motionless in a secluded situation in the rain-forest and observed the Elepaio's aerial maneuvers. The flight is rapid, usually silent, with considerable fanning of wings and tail, and manifest ability in turning sharp corners.

Most of the insect food is gleaned from the branches and foliage of trees and shrubs, and from the thick envelopment of mosses, lichens, liverworts, etc., which covers the woody vegetation in the rain-forest. Insect larvæ comprise an important element of the diet. Beetles, mature and as larvæ, myriapods, flies, moths, caterpillars of many species, together with spiders and slugs, are the dominant items on the food-list.

Not infrequently the Elepaio feeds from the ground,—among the dead *koa* leaves, in the fern banks, and upon prostrate and mouldering tree trunks. Myriapods, larvæ, spiders and slugs are gathered in these situations. The author has commonly observed the Elepaio feeding on or very close to the ground on the steep slopes in the montane rain-forests of Oahu and Kauai, as well as on the gentle slopes of Hawaii. He has never seen vegetable food eaten by this bird.

The Elepaio feeds all day long, from dawn to darkness, without cessation. There is no special feeding time; the bird is apparently insatiable and always on the *qui vive* for food. Seale found, in a large series of birds shot under widely varying conditions, that all had their stomachs literally gorged with insects and larvæ. The Elepaio is keen-eyed and quick of movement; it catches and devours insects with great rapidity. It holds down large moths in its claws, and tears off the wings, etc., before swallowing the morsel. The author has observed the bird methodically pull off the legs and wings of various adult insects, in preparation for swallowing.

The economic value of the Elepaio as a destroyer of noxious

insects is very high. These pests have multiplied prodigiously in recent years, and it is to be deeply regretted that the native birds are not sufficiently abundant to hold them in check. All native passerine species are now rigidly protected by law, and are rarely molested, in any direct way, by man.

Habits.—Perennial restlessness is an outstanding Elepaioan trait. The birds are always on the move. They chase and scold one another, sometimes more than two participating. When there are several birds in the same immediate vicinity, their program is a continual round of frolic, scolding, and feeding. Fearlessness and curiosity make the Elepaio conspicuous in the woodlands, whereas the other native birds slip away silent and unseen. The young birds are particularly tame and curious. Young and old alike will approach within a few feet of the quiet observer. Their inspection is sometimes silent, but more often is accompanied by chattering and scolding. They are pugnacious to birds other than their own kind, and will chase large birds away from a favorite feeding ground. The author has frequently observed the Elepaio chase and harass such species as *Vestiaria coccinea* and *Chlorodrepanis stejnegeri*.

The Elepaio has a number of distinctive little mannerisms with wings and tail. Sometimes it droops the wings and cocks the tail up over its back, remarkably like a Wren. Often, upon alighting, it spreads the tail fanwise. The male is not known to manifest any special peculiarities of habit or song during the mating season.

Song and call-notes.—The name Elepaio is the Hawaiian rendition of the simple song, which is scarcely more than a call "E-lé-pai'-o." This is also variously translated,— "O-nó-ka'-ia," "Pe-pá-kéo," "Too-wée-6o," etc. The notes are whistled very clearly and distinctly and carry a long distance. Occasionally the author has heard the bird singing *sotto voce*.

According to the natives the Elepaio is invariably the first bird to sing in the early dawn. In many native legends this matin takes the place of the cock-crowing of European folk-tales, at which time the demigods, ghosts, and fairies must cease their nocturnal enterprises, even though they be incomplete. The bird sings at all hours of the day, and occasionally, when disturbed, at night. The Elepaio has no special song in the mating season, nor are there noteworthy variations in the song.

Another call-note is a sharp "wheet, who" or "tweé-ou" uttered repeatedly and with piercing shrillness. This "whit" call has a true Flycatcher quality. Frequently the Elepaio meets the human intruder with a scolding "chrr, chrr, chrr." Several gurgling call-notes are also used, particularly when the bird is engaged in catching insects. It has no true flight-song, but on rare occasions sings while on the wing. The young birds sing during the first fall and winter. Altogether the Elepaio possesses at least seven or eight calls, and possibly this number reaches a dozen or more.

Natives' Ideas.—To the early Hawaiians the Elepaio was a sacred bird, a demigod (*aumakua*), and capable of omening. It occupied a prominent place in native mythology and was revered by the canoe-makers as a presiding genius of their labors. The canoes were hewn chiefly from the massive trunks of the *koa*, which grew abundantly in the Elepaio's range. Many religious rites and ceremonies preceded and accompanied the selection, felling, and shaping of the trunk. If the Elepaio, while inspecting a trunk previously selected by the natives for canoe-making, pecked at it in a certain way, or uttered certain notes, the trunk, even though partially felled, was abandoned by the natives as unfit for use. The author has conversed with many of the old-time Hawaiians concerning the Elepaio and has found that they always speak of the bird with great respect. The modern natives know little or nothing of this lore.

Breeding habits.—There is little accurate information concerning the breeding habits of any of the native passerine birds, owing to the extreme difficulties of studying these birds in the field. More is known concerning the Elepaio, however, than of any other native bird.

No special phenomena of courtship have been observed. It not uncommonly pairs and breeds before assuming the mature plumage. This fact has been determined through observations of nesting birds, and by the examination of a large series of specimens. The exact length of time during which the intermediate plumage is worn is not known, but there is undoubtedly considerable variation at different elevations and situations on the several islands. The Elepaio, so far as is known, is monogamous; it probably takes a new mate for each nesting season.

The breeding season begins in the late winter and early spring (February, March, April), during the latter part of the rainy season, and is conditioned by the severity of the rains. Eggs and young have been found in the nests in March, April, and May. The species are single-brooded.

The nest is the most ornate and easily found of the known nests of Hawaiian birds. The nests and eggs of all three species are identical in every respect. The nest is usually built in a small tree, 6-40 feet from the ground. Occasionally it is placed near the ground, but this is exceptional. Henshaw found a nest on a horizontal tree-fern trunk (*Sadleria*) within two feet of the ground. The Elepaio apparently does not nest in the very high treetops (60-90 ft.) The average elevation is about 20 ft. It is the only Hawaiian woodland bird that habitually nests at low elevation from the ground.

In this connection it should be noted that the introduction of the Mongoose (*Herpestes griseus*) in 1883, for the purpose of eradicating rats from the sugar-cane fields, resulted in great damage to native bird life. The Mongoose quickly found its way up into the forest zones, and has seriously decimated the ranks of all low-nesting birds. The author has found the Mongoose, for example, in all parts of the Oahuan forests, up to an elevation of 2500 ft., and on Maui and Hawaii it ranges to much higher elevations.

The Elepaio shows no preference for any particular species of tree or shrub, but uses any one that is suitable for its purpose. Nests have been found in *Metrosideros polymorpha*, *Acacia koa*, *Dodonaea viscosa*, *Santalum freycinetianum*, *Pipturus albidus*, *Maba sandwichensis*, and other common trees of the humid forests. Interesting light is thrown upon the Elepaio's adaptability by the fact that it occasionally nests in the dense thickets of foreign introduced shrubs, such as guava (*Psidium guayava*) and lantana (*Lantana camara*). These invaders now cover large areas in the lower portions of the Elepaio's range. The other native birds are practically never found in these naturalized thickets, but the Elepaio has evidently taken the change as a matter of course.

The nest is usually placed in an upright fork or saddled upon a horizontal branch and supported by lateral twigs. It is well concealed by foliage. The author has found on two occasions

nests in horizontal forks at the extreme ends of horizontal branches. The nest is a neat, compact, and beautiful structure. It is usually made of grasses, fine roots, moss, or leaves, firmly woven into a deep cup. The strong skeletonized frames of the leaves of various forest trees are commonly used as nest material. There is much variation in size, some nests being 2-3 times as high and wide as others. Typical dimensions are, 1.5 inches deep, 2 inches diameter, walls .75 inch in thickness. Nests 3.25 inches deep and 2.50 inches in diameter are not rare. The exterior is abundantly and artistically decorated with bits of fern-frond or lichen, held in place by silk from spiders' webs. The lining is of fine moss and vegetable fibers. The fine fibers of the *pili* grass are commonly used for the lining. Wilson found a nest which was made almost exclusively of the bleached calyces of the *poha* (*Physalis peruviana*), and that was of unusual delicacy and beauty.

As a rule two eggs only are laid, although sometimes there are three. The intervals between deposition are not known, but probably do not exceed a day or so, as the young emerge at about the same time and do not manifest marked differences in age. The egg is 1.25 inches long by 1.11 inches in diameter; the deviations from this average are very slight. The shape is ovate. The ground-color is pure grayish-white or very pale yellowish, with no indication of bluish or greenish tints. The egg is more or less heavily marked with small spots, speckles, and blotches of brown or reddish-brown; the under spots are pale lilac. The spots are usually most numerous around the larger end of the egg. Both sexes take part in the construction of the nest, incubation of the eggs, and in the feeding of the young. Practically nothing is known concerning the rearing and development of the young. There are no native predatory land-mammals or serpents in the Hawaiian islands; the only animal enemies of the Elepaio during the nesting season are the introduced rats, mongoose, and wild house-cats. The *kona* or southerly storms, which are of frequent occurrence during the nesting season, undoubtedly often prove fatal to the life of the nest.

FURTHER NOTES ON NEW BRUNSWICK BIRDS.

BY P. B. PHILIPP AND B. S. BOWDISH.

Plates V-VI.

RENEWED field work by the authors during the summers of 1917 and 1918, in the same region of northern New Brunswick as that dealt with in previous papers,¹ has resulted in the securing of certain additional data concerning the bird life of that region, that would seem to justify publication.

Since in our previous papers definite locality was not given, it may be here stated that all records, in previous papers as well as the present one, refer to Northumberland County. A large part of this region is wild and undeveloped. Township boundaries are difficult to locate, and it is therefore impracticable to attempt more detailed locality references.

In 1917 the authors were in the field from May 16 to July 2. Mr. T. F. Wilcox was a member of the party from June 15 to 30, and Messrs. George H. Stuart, 3d, and Samuel Scoville, Jr., from June 18 to 25. Earlier arrival in the field was undertaken for the purpose of studying breeding habits of the early nesting species, but the season here, as elsewhere, was extremely backward, and nesting dates by no means normal. Snow banks lay everywhere in the woods, often to a depth of five and six feet, at the time of our arrival, and lingering snow was seen in the woods as late as June 5.

Field work for 1918 occupied the period between June 11 and July 1. The season was apparently a little earlier than normal. Mr. George H. Stuart, 3rd, was again a member of the party from June 15 to 24, and Dr. Henry F. Merriam from June 16 to 29.

Additional Birds Noted.

The last two seasons' work has added twenty-three species to our previous list of birds observed, as follows:

***Rissa tridactyla tridactyla*.** KITTIWAKE.—A flock of about twenty of these birds was observed on a point of beach, June 2, 1917.

¹ The Tennessee Warbler in New Brunswick, Auk, January, 1916, pp. 1-8; Some Summer Birds of Northern New Brunswick, Auk, July, 1917, pp. 265-275.



1



2

1. NEST OF THE CAPE MAY WARBLER.
2. WILSON'S SNIPE ON ITS NEST.

[illegible]

Sula bassana. GANNET.—Considerable numbers noted off the beaches, June 2, 1917.

Clangula clangula americana. GOLDEN-EYE.—On our arrival, June 11, 1918, a nest containing ten eggs, mostly pipped and about hatching, was shown to us by a young man living near by. The eggs reposed in a beautiful and profuse bed of down, at the bottom of a hollow about two feet deep and eight inches in diameter, in the broken top of a yellow birch, dead, save for a thin, live outer shell, standing on a fence line between woods and an open field.

Oidemia deglandi. WHITE-WINGED SCOTER.—Two noted May 17, 1917.

Branta canadensis canadensis. CANADA GOOSE.—Three noted, May 16, 1917, and a few thereafter, two being seen as late as May 28.

Nycticorax nycticorax naevius. BLACK-CROWNED NIGHT HERON.—Two birds noted June 22, 1918, and on several subsequent dates. Doubtless breeds sparingly.

Philohela minor. WOODCOCK.—The omission of the Woodcock from our previous list of birds noted was an oversight, as one of these birds was observed June 6, 1916. One was also noted June 14, 1917. Both records were made at the same place, a muddy island, covered with willow and alder bushes, and this was the only locality where Woodcocks were seen.

Pisobia minutilla. LEAST SANDPIPER.

Ereunetes pusillus. SEMIPALMATED SANDPIPER.—One or both of these sandpipers, in a flock numbering some thirty individuals, were observed, May 20, 1917, and on other occasions, up to May 27.

Totanus flavipes. YELLOW-LEGS.—Two noted, May 17, 1917.

Canachites canadensis canace. CANADA SPRUCE PARTRIDGE.—A brood of half grown young noted, June 21, 1917. Reported as formerly abundant, this bird appears to be now rather scarce in this region.

Zenaidura macroura carolinensis. MOURNING DOVE.—One secured, in scant scrub brush, on beach, May 17, 1917.

Circus hudsonicus. MARSH HAWK.—One noted, May 18, 1917, and on one or two subsequent occasions.

Falco columbarius columbarius. PIGEON HAWK.—One observed, May 16, 1917.

Falco sparverius sparverius. SPARROW HAWK.—Several noted during 1917 visit. One observed entering old Flicker excavation, May 18, 1917, was doubtless nesting there.

Archilochus colubris. RUBY-THROATED HUMMINGBIRD.—A nest containing two fresh eggs was found on June 23, 1917, built on a drooping dead limb of a spruce about twenty feet from the ground, in open woods, and another, in similar situation, on June 25. We met with Hummingbirds quite commonly, both in 1917 and 1918.

Empidonax traillii alnorum. ALDER FLYCATCHER.—Common on some of the mud flats and islands where suitable alder growth occurs. Doubtless breeds.

***Empidonax minimus*.** LEAST FLYCATCHER.— Found breeding quite commonly on mud flats and islands, among willow and alder growth. Two nests, each containing four fresh eggs, were found, on June 15, 1918.

***Loxia curvirostra minor*.** CROSSBILL.— A flock of twenty or thirty birds noted, on June 25, 1917, and a similar flock on June 18, 1918.

***Plectrophenax nivalis nivalis*.** SNOW BUNTING.— Several noted, May 16, 1917.

***Spizella monticola monticola*.** TREE SPARROW.— Two were seen on May 16, 1917, and a few on May 28.

***Vireosylva olivacea*.** RED-EYED VIREO.— Quite common in suitable localities in 1917 and 1918, where, for some reason, it had not been previously noted.

***Dendroica tigrina*.** CAPE MAY WARBLER.— Two males and a female were noted on June 3, 1917, and birds of this species were observed not uncommonly thereafter throughout that season. In 1918 they were found quite common and well distributed in all suitable localities. Four nests were located, position and general conditions being remarkably uniform, and agreeing also, in the main, with the nest found at Lake Edward, Quebec, by Dr. Merriam, in 1916.¹ They were in rather high spruce trees, within two or three feet of the extreme top, usually as near the top as suitable site and cover could be secured. All were built in very thick foliage, against the main stem of the tree, resting lightly on twigs and foliage, but fairly secured thereto by webs, and were entirely invisible from the ground, in every case.

On June 22 the first nest held six eggs, two of which were without incubation, the other four being fairly well incubated. The female sat closely until the climber was within two or three feet of the nest, when she dropped almost perpendicularly to the ground. No pounding, jarring or shaking of the tree served to cause her to leave the nest, even for a moment. This nest measured $4\frac{1}{2}$ by $3\frac{1}{2}$ inches outside diameter, and $2\frac{1}{2}$ inches inside diameter; $2\frac{1}{2}$ inches outside depth, and $1\frac{1}{2}$ inches inside depth. Exteriorly it was composed of green moss from dry woods ground, interwoven with fine spruce twigs, dry grasses, a few bits of club moss and vegetable down; interiorly of fine dead grass, with a thick lining of hair, feathers and a little fur, the neat and smooth felting of the lining forming a conspicuous feature of differentiation from nests of Blackpoll and Myrtle Warblers. This nest was about thirty-five feet up, in a thick foliated spruce tree, standing in a semicircular opening in the woods, beside a public road, from which, save for the thick foliage in which it was situated, the nest would have been plainly visible. The six eggs measured: $.65 \times .49$, $.66 \times .48$, $.66 \times .50$, $.65 \times .47$, $.66 \times .47$, $.56 \times .42$. They were white in ground color, well marked with blotches, spots and specks of reddish-brown, and a few fine dots of very dark purple or black.

On June 26, the second nest, about thirty-five feet up in a thick, medium-

¹ Nesting of Cape May Warbler at Lake Edward, Quebec, Auk, October, 1917, pp. 410-413.

sized spruce, standing on the border of woods and clearing, contained six fresh eggs. Both nest and eggs were very much like those described by Dr. Merriam.

On June 29, the third nest held five eggs, which seemed to be the complete laying. This nest was about forty feet up, in a thick spruce, in a fairly open spot in the woods, near a trail. Nest and eggs were much like the second.

The fourth nest held six fresh eggs on June 29. It was about forty feet up, in a thick spruce, in fairly open woods. The material was the same as in the first, with the addition of several dead pine needles in the exterior. It measured $3\frac{1}{4}$ by $3\frac{1}{4}$ inches, outside diameter, 2 inches inside diameter, 2 inches outside depth, by $1\frac{1}{4}$ inches inside depth. The eggs measured $.67 \times .53$, $.65 \times .52$, $.68 \times .53$, $.66 \times .53$, $.67 \times .53$, $.67 \times .52$. In color they were much like the second and third sets, and the one described by Dr. Merriam.

It appears to be characteristic of many of these birds that the nest tree selected is fairly openly situated, at least as to one side, although this is not always the case, since other pairs watched were very evidently nesting in trees where it was much more difficult to detect them. The extent to which our experience in the case of the four nests located in 1918 agreed with that of Dr. Merriam in 1916, tends to suggest that nesting conditions as he found and described them are more typical of the Cape May Warbler than those previously described, at least in the localities where we studied them.

***Dendroica aestiva aestiva*.** YELLOW WARBLER.—One seen, June 13, 1917.

Supplementary Notes.

Notes on species treated in our previous paper are amplified by the results of the past two seasons' work as follows:

***Gallinago delicata*.** WILSON'S SNIPE.—A nest with four eggs, well advanced in incubation, was found on June 16, 1917, and with some difficulty the bird was photographed from a crude and very imperfect blind of cedar branches, despite almost continuous showers. Another nest with four eggs, incubation one half or more, was found in the same bog, June 12, 1918. Only the single pair of birds was positively ascertained to inhabit this bog, and none were observed elsewhere in the region.

***Agialitis meloda*.** PIPING PLOVER.—In 1917 nesting had commenced by May 28, when one nest with one egg and another with two eggs were found. A total of twelve nests with full complements of four eggs each were observed during the season. Nesting was already well under way when we reached the locality on June 11, 1918, four nests with four eggs each being observed that day, and twelve more with complete layings, four eggs each, some well incubated, on June 13. A total of eighteen nests with complete sets of eggs was noted during the season.

Asio flammeus. SHORT-EARED OWL.—A nest containing six well incubated eggs was found, June 11, 1918, on the same beach where the two nests with young were located on June 19, 1915, and within a few feet of the site of one of the earlier nests.

Dryobates villosus leucomelas. NORTHERN HAIRY WOODPECKER.—A nest with young was found in a dead maple stub in a burnt barren, on May 29, 1917. On May 30 of the same year another nest about fifteen feet up in a dead maple stub in a similar situation, contained four eggs, very slightly incubated. On June 9, 1917, a third nest in a cedar telephone pole beside a public road was examined. It was at a height of about nine feet; cavity 14½ inches deep; entrance 2½ inches in height by 2½ inches in width. This nest contained four nearly fresh eggs.

Picoides arcticus. ARCTIC THREE-TOED WOODPECKER.—One of the objects of the early visit to New Brunswick in 1917 was further investigation of the nesting of this species. These woodpeckers, however, appeared to be markedly affected by the general lateness of the season, and at the time of our arrival it is evident that some of them had not commenced digging nest excavations. On May 22 a nest hole was located in a dead maple stub, near the edge of a large burnt barren, and a short distance from the edge of mixed woods. The male was in the cavity at the time of this visit, and the female came to the stub during the time of our stay. On the following day we again visited the nest stub, and with a large auger bit "tapped" the nest hole, finding that no eggs had yet been laid. The male was again in the hole and remained in it until tapping operations were well under way. The tap hole was carefully plugged, and plug and surrounding surface rubbed with soft, rotten wood. This nest was again visited on May 30, on which occasion the male was found sitting on four eggs, incubation having just commenced. The eggs having been removed, the plug was replaced, and while we were still close to the stub the male re-entered and had not emerged when we lost sight of the stub, as we left the locality. During this visit the female was not seen. It may be surmised that when she returned and discovered the condition of affairs, her worthy spouse had some explaining to do.

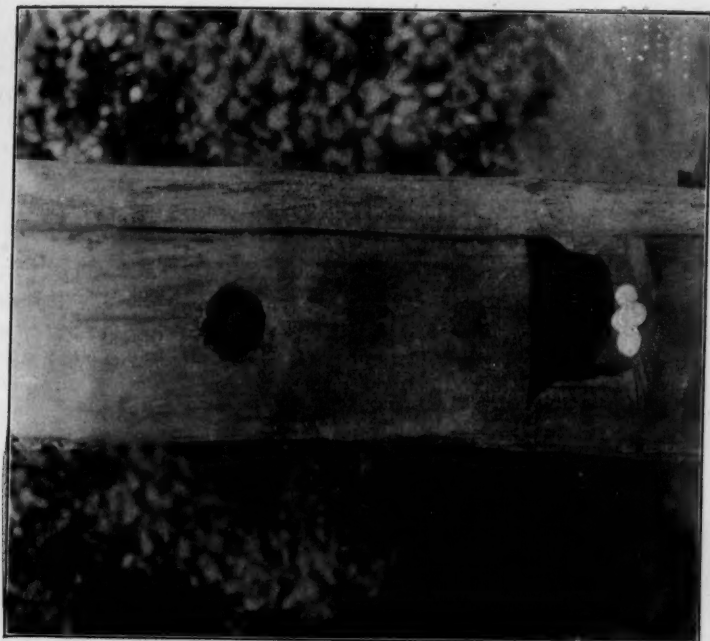
On June 19 we again visited this nest and found the male looking out of the entrance, as we approached. The nest was found to contain five well incubated eggs. The birds did not again use the nest, although the plug was replaced.

On May 25 we succeeded in "lining" the various flights of a watched female bird, to where a nest excavation was well under way in a live balsam with dead heart, some two hundred feet into the mixed woods, from the edge of a clearing covered with stubs and small second growth. This excavation was at a height of only about four feet.

On June 6 the female bird was found sitting on three slightly incubated eggs. No difficulty was experienced in getting all the photographs desired of this bird about the nest entrance and looking out of it: in fact it was much more difficult to prevent her entering too quickly, even while



ARCTIC THREE-TOED WOODPECKER AND NEST.



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we were operating at a distance of ten feet, it often being necessary for one to stand beside the tree, and even tap on it, to detain her.

The nest located on May 22 was at a height of about ten feet. The cavity measured $10\frac{1}{2}$ inches from the lower edge of entrance to bottom. The entrance measured $1\frac{1}{2}$ inches in height and $1\frac{1}{2}$ inches in width. The first set of four eggs measured: $.99 \times .77$, $1.01 \times .79$, $.99 \times .79$, $1.00 \times .76$; the second set of five eggs measured: $.99 \times .80$, $.97 \times .77$, $.98 \times .80$, $.95 \times .76$, $.97 \times .80$.

Within some five hundred feet of the nest that was located on May 25, there was a nest hole of the year before, quite possibly having belonged to the same pair of birds. It was also in a live balsam with a dead heart, at a height of about eight feet. One old nest hole, which quite evidently belonged to this species, was only about two feet from the ground. On June 6 a nest hole about one half completed, was found in a live balsam with dead heart, in open, mixed woods. For some reason this had been abandoned. Some four or five additional pairs of these birds were observed during the first two weeks of June, but further nests were not located.

The somewhat limited data secured seem to give prominence to several facts in the nesting of this woodpecker in the region under consideration. Apparently nest sites are selected indiscriminately, in dead stubs in open cleared ground or burnt barrens, and in the woods, where nests are often in dead-hearted live trees. The birds have a remarkably strong attachment for their nests, as evidenced by re-laying in nest holes from which eggs had been removed, and their disregard of the immediate presence of intruders. The male evidently performs his full share of the work of incubation, as well as care of young. New nest holes are apparently dug each year, and these may not be in the immediate vicinity of nests of the previous year. The site selected tends to be low, only one nest having been noted at a height of over ten feet, while one, as noted, was as low as two feet. Entrances to nest holes are strongly beveled at the lower edge, forming a sort of "door-step," and more or less at sides and even top. While this is true in some cases with the Northern Hairy and some other woodpecker excavations which we have examined, it has not proved so frequent or pronounced. With experience, one can usually identify the nest hole of this species with comparative certainty, by this one feature.

Tyrannus tyrannus. KINGBIRD.—At least one pair noted each year. A nest containing a full complement of three eggs on July 1, 1918, was built in a dead spruce on a fence line.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.—A nest found partly built, on a horizontal branch of a balsam, about thirty-five feet from the ground, in open woods, on June 19, 1918, contained two eggs on June 26. As no more eggs had been laid by June 29, it appeared that this was the full set.

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER.—Additional nests were found, one on June 21 and two on June 27, 1918, each containing four eggs, one of the two latter sets being well incubated, the others fresh.

Euphagus carolinus. RUSTY BLACKBIRD.—A nest with five young, two or three days old, was found June 13, 1917. It was built about four feet from the ground, in a scrubby spruce, in scanty growth of spruce and tamarack, in boggy ground. Exteriorly it was composed of scrubby spruce twigs, with a little usnea moss in the foundation, and lined with dry grass, some of which retained green color. The female was brooding when the nest was found, and remained on the nest until approached within three feet. It was evident that several pairs of birds were breeding in the general vicinity, as was also the case in 1918.

Spinus pinus. PINE SISKIN.—Nesting was just commencing at the close of our 1918 visit. One nest contained three eggs on July 1, and two others were just being completed.

Melospiza lincolni lincolni. LINCOLN'S SPARROW.—More common than our earlier experience indicated. In 1917 six nests with four eggs each were located, June 14, 16, 18, 19, 20 and 27. In 1918 a nest with four and another with five eggs were located, June 11, and another with five eggs, June 12.

Vireosylva philadelphica. PHILADELPHIA VIREO.—In the abnormal season of 1917, no signs of nesting by these birds were noted on a visit on June 14, to the locality where they were found in 1916, though two or three of the birds were observed. In 1918, however, six additional nests, five containing four eggs each, and the sixth three (which was apparently the full laying), were located. These corresponded closely with the nests found in 1916, as to locality, situation and material, the dates, however, averaging a little later, two nests containing fresh eggs as late as June 27.

Vermivora peregrina. TENNESSEE WARBLER.—The seasons of 1917 and 1918 considerably amplified our experience with the breeding of these birds. In 1917 nine nests with complete layings of eggs were examined, as follows: June 23, five eggs; June 25, six eggs; June 27, two nests with six eggs each; June 29, two nests with six eggs each; June 30, five eggs, seven eggs; July 2, six eggs. The first nest found in 1918 was June 16, six slightly incubated eggs, another on the same date containing five. Nests with partially incubated eggs were found as late as June 30, on which date, also, the second nest containing young was noted, eggs previously found having hatched by June 29. In 1918 no less than thirty-four nests were found. Of these three were either deserted or not visited later; one contained only three eggs, which the bird assiduously incubated; one contained four eggs; eight contained five eggs each; eighteen contained six eggs each; three contained seven eggs each.

The experience of the past two years has demonstrated that while the boggy ground nesting, previously described, is the really typical and by far the most common form, not a few of these birds nest on higher and dryer ground. One such nest, found June 24, 1918, was well up on a steep hillside, in rather open woods, on fairly dry ground, utterly devoid of moss and grass cover. It was built among a thick growth of dwarf dogwood, and under a tiny, crooked stemmed maple sapling, very well concealed,

and was rather more substantially built than the average nest of this species. In the light of much added experience, our earlier statement that the usual number of eggs is five is subject to correction, since it appears that more full layings of six eggs are to be found than of five. In most respects, however, data acquired in the past two years substantiate that secured in 1915 and 1916, and previously recorded.

Compsothlypis americana usnea. NORTHERN PARULA WARBLER.—While no nest was located, birds were seen on various occasions, both in 1917 and 1918, and in the latter year a male in full song was always to be found about a particular group of trees, where the abundance of usnea moss afforded innumerable ideal nesting sites.

Dendroica castanea. BAY-BREASTED WARBLER.—This species appeared to be much more abundant during the past two summers than in either of the two preceding. Notwithstanding this abundance, in 1917 only five nests with complete layings were found, two of five, two of six, and one of seven eggs. The earliest was not complete until June 29, and it is probable that many nests were still unbuilt at the time we left. In 1918 we examined a total of thirty-eight occupied nests, complete layings being about equally divided between five and six eggs, with one exception, in which case a bird was incubating three eggs. The first nests, with five and six eggs, were found on June 15, and nests were still being built when we left on July 2. No nests with seven eggs were found this year.

Dendroica virens. BLACK-THROATED GREEN WARBLER.—A nest containing five well incubated eggs was found in a little cedar, about four feet from the ground, June 20, 1918.

Dendroica palmarum hypochrysea. YELLOW PALM WARBLER.—In 1917 a total of seven nests was found; June 19, four eggs; June 20, four eggs; June 21, four eggs, five eggs; June 23, four eggs; June 25, four eggs; July 1, five eggs. Lateness of season was more apparent in the nesting of this species than, perhaps, any other. In 1918 the birds appeared less numerous than in previous years, and the only nest located was one containing five newly hatched young, June 12. By the 19th these birds had left the nest.

Setophaga ruticilla. REDSTART.—Two nests with five eggs each were observed in 1918, June 19 and 24.

Penthestes hudsonicus littoralis. ACADIAN CHICKADEE.—On June 5, 1917, a nest was found, nearly or quite completed, in a natural cavity in a cedar stump, about two feet from the ground. On June 16 the bird was sitting hard on five eggs, and was persuaded to come out only with great difficulty. As she laid no more, this was apparently her full laying. On June 24 a nest containing seven quite small young was found in a knot hole in a small live spruce. On June 13, 1918, another nest with young was found in a cavity in the top of a dead and rotten stub, about ten feet from the ground. This nest was very near the site of the 1917 nest with young, very possibly belonging to the same pair of birds.

SPRING ARRIVALS.

Field work in 1917 was commenced at a sufficiently early date to permit of the noting of the arrival of a number of species, and it was further possible to obtain from an experienced guide, who has been with us in all of our field work in this section, closely approximate arrival dates for a number of additional species which had preceded us. While this information is incomplete, migration data from the region in question are not so ample as to preclude a certain amount of value attaching to the publication of the records we thus obtained.

Dates prior to May 16 were, of course, obtained from the guide, and while not exactly accurate, are very nearly so. Figures following dates indicate the number of birds noted on the date of arrival.

Great Black-backed Gull, June 2 (2).

Kittiwake, June 2 (considerable numbers).

Common Tern, May 28 (6).

American Bittern, May 19 (1).

Great Blue Heron, June 2 (2).

Least or Semipalmated Sandpiper or both, May 20 (20) (?)

Spotted Sandpiper, May 20 (2).

Black-bellied Plover, May 26 (30-40).

Chimney Swift, June 6 (10).

Kingbird, June 16 (2).

Olive-sided Flycatcher, May 29 (1)

Bronzed Grackle, about May 7.

Purple Finch, May 25 (considerable numbers).

Pine Siskin, June 13 (6).

Lincoln's Sparrow, May 27 (2).

Chipping Sparrow, May 21 (1).

Junco, about May 4.

Scarlet Tanager, June 6 (1 male).

Cliff Swallow, May 31 (6).

Tree Swallow, May 16 (3).

Bank Swallow, June 2 (6).

Blue-headed Vireo, May 27 (2).

Black and White Warbler, May 27 (1).

Nashville Warbler, June 7 (5).
Tennessee Warbler, June 1 (3).
Northern Parula Warbler, June 18 (3).
Cape May Warbler, June 3 (3—2 males, 1 female).
Yellow Warbler, June 13 (1).
Myrtle Warbler, May 18 (1).
Black-throated Blue Warbler, May 31 (1).
Magnolia Warbler, May 27 (3).
Bay-breasted Warbler, June 5 (1 male).
Black-poll Warbler, May 27 (1).
Blackburnian Warbler, May 31 (1 male).
Black-throated Green Warbler, June 5 (2).
Yellow Palm Warbler, May 18 (2).
Ovenbird, May 31 (3).
Wilson's Warbler, June 10 (6).
Canadian Warbler, June 11 (1 female).
Redstart, June 3 (1).
Red-breasted Nuthatch, May 31 (2).
Olive-backed Thrush, May 18 (1).
Hermit Thrush, May 18 (1).
Robin, about May 4.

WINTER BIRDS OF EAST GOOSE CREEK, FLORIDA.

BY R. W. WILLIAMS.

FROM November 16 to 24, 1917, I was a guest at the hospitable house of my friend, George E. Lewis of Tallahassee, Florida, at East Goose Creek, Wakulla County, in that State. We were there for a few days' duck hunt and to enjoy the pleasures and recreations of the sea coast. I took advantage of the opportunity to make some observations on the birds there as well as in the woodlands, prairies, and occasional small fields within two miles.

East Goose Creek is the designation of a small portion of the shore and salt marsh of a quiet bit of more or less land-locked and

shallow water of the Gulf of Mexico, lying immediately east of Goose Creek and about eight miles west of the St. Marks Light House and twenty-five miles southwest of Tallahassee. There are not more than seven houses at the place, all temporary lodgings for a few persons who go there intermittently to hunt or fish. The family of Lieut. Ludlow Griscom owns one of these houses. The place is the base for the operations of a few mullet fishermen who sell their catches largely to persons from southern Georgia and sections of Florida accessible thereto, who, in turn, go there in wagons from time to time in the fall and winter, to lay in a supply of fish for personal use.

Goose Creek is a narrow neck of shallow water cutting into the land for a distance of about two miles, in which are numerous oyster beds, mud flats, and small bulrush-covered islets, all exposed at low tide, thereby furnishing capital feeding grounds for Ducks, Shore-birds, Herons, and Gulls. On each side of the Creek vast marshes, thickly covered by bulrushes, extend for goodly distances to the heavily timbered lands and more or less sterile prairies of the region. Along the sandy shore in front of East Goose Creek there is a narrow ridge of slight elevation upon which there were growing a few scraggly bushes, never more than eight feet high, of *Ilex vomitoria*, *Iva frutescens*, and *Lycium carolinianum*, the last bearing a delicate, pretty little blue flower during my visit. In these bushes I found a few Ruby-crowned Kinglets, a Blue-headed Vireo, and numbers of Palm Warblers. The bulrush marshes were ornithologically characterized by Scott's Seaside and Nelson's Sharp-tailed Sparrows, Prairie Marsh Wrens, and Florida Clapper Rails, of which there were goodly numbers. The Sparrows and Wrens kept themselves well hidden down in the dense rushes and rarely appeared to view except when startled by my unexpected approach or to answer my squeaking call. The Rails were seldom seen; indeed, I saw only two; but their loud cries were heard on every side toward dark and at early morning. From their abundance and the unwariness of the two individuals seen, I am pleased to believe that these birds are not in much requisition for sport or food at East Goose Creek.

Just off the road, in what I call the prairie, about half a mile back toward the woodlands, is a small, shallow, muddy pond,

surrounded by bulrushes and rank weeds. I passed this pond nearly every day and always saw a trio of stately and imperturbable Greater Yellow-legs standing close together in or near its center. Passing further back, the pine, scrub palmetto, and grassy area is reached. Here the Yellow Palm and Myrtle Warblers were abundant, and Phœbes, White-eyed Towhees, Maryland Yellow-throats, Pine Warblers, Mockingbirds, Cardinals, Loggerhead Shrikes, and Brown-headed Nuthatches were fairly represented. This area passed, we reach the vast and magnificent hammock lands supporting giant pines, magnolias, hickories, cedars, sweet gums, live and white oaks, and an occasional cluster of immense cypresses, everywhere interspersed with handsome, graceful cabbage palmettos which often attain a height of at least twenty-five feet. Underbrush is nowhere so dense as to impede progress or observation to any serious extent. This hammock was alive with birds. I could almost imagine that all the Ruby-crowned Kinglets in America had congregated in those woods. Brown Creepers were uncommonly numerous, and Hermit Thrushes were abundant. Downy and Red-bellied Woodpeckers were quite common, and I had the great satisfaction of seeing and listening to the imperious notes of no less than half a dozen majestic Pileated Woodpeckers. Nestled down in the very bosom of this hammock, I ran across a small, grassy pond, completely surrounded and hidden from view by a dense fringe of tall saw grass growing in the black mud out to the very water's edge. My companion that day was Miss Alice Corry of Quincy, Florida, a charming and enthusiastic young lady, who had gone out with me to learn what she might about the birds of the region. We felt sure that a few Wild Ducks must be feeding in this pond, but the problem was how to find it out without flushing them before we could come into range for a shot. We cautiously entered the saw grass, but quickly discovered that if we would reach the edge of the water we must suffer laceration of our hands and the discomfort of wet, muddy shoes and clothing. Nevertheless, we persisted, and upon reaching an open view of the pond I saw, well within gun range, a female Wood Duck energetically feeding in some open water between two grassy plots. The bird took no alarm at our presence and continued its quest for food. As this species is not now very

abundant and also is protected for a term of years by the Federal Migratory Bird Law, I had no purpose to shoot it. I still felt that other ducks must be somewhere on the pond, but our unusually loud conversation failed to stir them. We made our way back to dry land and walked around to another side of the pond. By this time our hands were actually dripping blood from the numerous and in some instances deep, cuts inflicted by the saw grass. We decided that my companion should fire her gun and I would be ready for any legitimate game that might flush in consequence. At the explosion, a large flock of ducks rose, out of which I knocked down two, but recovered only one — a male Pintail. On another occasion I killed a Green-winged Teal out of a flock of ducks, including some Mallards, flushed from this pond, the vicinity of which, I may add, was a favorite resort for several species of the smaller birds. Here, early in the mornings, I found Brown Thrashers, White-throated Sparrows, Ruby-crowned Kinglets, Golden-crowned Kinglets, Maryland Yellow-throats, and Orange-crowned Warblers, quite abundant. I was informed that Wild Turkeys are occasionally met with in these woods. George Lewis killed one there in November, 1916.

For a general pleasure outing, weather conditions during my stay at East Goose Creek could hardly have been improved. We slept on the porch most comfortably, despite the chill of the night atmosphere. Each day was ushered in by the raucous voices of hundreds of Florida and Fish Crows which passed in a steady stream just beyond land in front of our house. They were always headed in the same direction,—toward their feeding grounds somewhere to the westward of Goose Creek. They returned pretty consistently over the same route toward dark every evening. I did not have an opportunity to follow them to their roost which, apparently, is not many miles east of Goose Creek. Without much doubt, this is the St. Marks roost referred to by Mr. Kalmbach in his article entitled "Winter Crow Roosts" in the 'Yearbook' of the Department of Agriculture for 1915, page 92.

Large flocks of Canada Geese were always in sight or hearing. They were feeding out in the bay around the grassy islands a mile or two from the mainland.

Among the ducks at Goose Creek I was surprised to note the

great preponderance of Mallards and Pintails. The quacking of the former was heard at all times of day as they fed, out of gun range, in the Creek, or rested in the open water out in front of the main shore. One afternoon, at low tide, we discovered a large flock of Mallards and Pintails, with a few individuals of other species, feeding on a mud flat in the Creek, but they took wing before we could arrive within gun range.

Great Blue Herons were fairly numerous all along the shores at both high and low tide. Least and Red-backed Sandpipers were not uncommon and fed together in small flocks along the beach and on the mud flats and oyster beds. Ospreys and Marsh Hawks were constantly beating to and fro, the former over the waters and the latter over the marshes and prairies. Like George Cavenish Taylor (*Ibis*, IV, 135), I observed that the Ospreys while flying with fish in their talons invariably hold them in a position parallel with the birds' bodies and with the fish's head always foremost.

I was delighted one day to see two Snowy Egrets feeding at a small, isolated pond, situated on the edge of one of the prairies and at the commencement of a rather heavily timbered area. Not only the woods and prairies, but also the salt marshes, oyster beds, mud flats, and shores were infested by "razor-backs," — a local name for the semi-wild hogs that roam at large in many portions of Florida. They are essentially omnivorous and I can well imagine that the ground-nesting species of birds in that region have somewhat of a struggle to perpetuate their kind. My observations of the birds at East Goose Creek were conducted without special or systematic effort, as I had gone there primarily for other purposes. Nevertheless, I recorded ninety species during my brief visit, a list of which concludes this paper.

Goose Creek has already made its début in ornithological literature. Lieut. Ludlow Griscom published a nominal list of 95 species seen there by him in December, 1915. (*Sixteenth Christmas Bird Census*, *Bird-Lore*, XVIII, 31). Of these, 85 were seen on the 29th and 10 on two other days. His estimate of the total number of individuals of the 85 species seen on the 29th was 7,085. In his list are 21 species which I did not see, namely, Pied-billed Grebe, Loon, Laughing Gull, Royal Tern, Florida Cormorant,

Ring-necked Duck, Baldpate, Shoveller, Redhead, Bufflehead, Semipalmated Sandpiper, Sanderling, Turnstone, Florida Barred Owl, Goldfinch, Savannah Sparrow, Louisiana Seaside Sparrow, Towhee, Winter Wren, Short-billed Marsh Wren and Blue-gray Gnatcatcher. My list includes 16 species which he did not see. Perhaps he did not visit the woodlands and fields covered by me, which would account for the absence from his list of most of these 16. It is likely, also, that had I prosecuted my explorations as thoroughly and as systematically as he did his, I would have accounted for a number of species in his list which are absent from mine. Our combined lists show 111 species recorded at East Goose Creek and in the immediate vicinity in the months of November and December alone. With the summer residents and spring and fall migrants added to this number, it is apparent that East Goose Creek is something of an ornithological field.

LIST OF SPECIES.

1. **Colymbus auritus.** HORNE GREBE.—Several seen on the main waters of the bay and on the Creek. They exhibited very little fear of us. Two were mistaken for ducks and shot by one of our party.
2. **Larus argentatus.** HERRING GULL.—Several seen daily around the main waters of the bay and over the Creek.
3. **Larus delawarensis.** RING-BILLED GULL.—A few seen from time to time around the main waters of the bay.
4. **Pelecanus occidentalis.** BROWN PELICAN.—Two were seen one day flying together over the Creek.
5. **Mergus serrator.** RED-BREADED MERGANSER.—One was killed by Mr. Robert Gamble in the Creek.
6. **Lophodytes cucullatus.** HOODED MERGANSER.—We picked up a wounded bird of this species on the shore of a small island in the Creek.
7. **Anas platyrhynchos.** MALLARD.—Common on all the waters we visited. This and the Pintail were the predominant ducks at and around Goose Creek. We also found them in a fresh water pond, back in the hammock lands. They mingled freely with other species of ducks, especially the Pintails.
8. **Anas rubripes.** BLACK DUCK.—Fairly abundant and found in flocks with the other species of ducks.
9. **Chaulelasmus streperus.** GADWELL.—One of Mr. Gamble's day's bags contained two of this species, killed in the Creek.
10. **Nettion carolinense.** GREEN-WINGED TEAL.—I procured one

out of a flock of Mallards and Pintails flushed from a fresh water pond back in the hammock lands.

11. *Dafila acuta*. PINTAIL.—Common on all the waters we visited. This and the Mallard were the predominant ducks at and around Goose Creek. We also found them in a fresh water pond back in the hammock lands. They mingled freely with other species of ducks, especially the Mallards.

12. *Aix sponsa*. WOOD DUCK.—I saw a female feeding in a fresh water pond back in the hammock lands.

13. *Marila affinis*. LESSER SCAUP DUCK.—One of Mr. Gamble's day's bags exhibited to me contained two of this species, killed on the Creek.

14. *Branta canadensis canadensis*. CANADA GOOSE.—On two or three occasions I saw a flock containing at least 250 individuals, and daily saw flocks of lesser size. They were quite wild and wary, but their honking was heard at all hours of the day. They frequented the open waters of the bay and the edges of the large marshes about two miles in front of East Goose Creek. We did not succeed in procuring a single specimen.

15. *Ardea herodias herodias*. GREAT BLUE HERON.—Fairly numerous at all times, feeding on the shores and in the shallow waters of the bay and the Creek.

16. *Egretta candidissima candidissima*. SNOWY EGRET.—On the morning of November 22, I saw two of these dainty birds standing close together on the muddy shore of a small, isolated pond in one of the prairie areas about three-quarters of a mile back of East Goose Creek.

17. *Hydranassa tricolor ruficollis*. LOUISIANA HERON.—Two were seen one morning feeding in the shallow water, at low tide, on a mud flat in the Creek.

18. *Florida caerulea*. LITTLE BLUE HERON.—On several occasions I saw one or two feeding, at low tide, in the shallow water off the main beach.

19. *Rallus crepitans scotti*. FLORIDA CLAPPER RAIL.—Fairly abundant in the bulrush marsh between the Creek and the road. They were very noisy near and just after nightfall and in the early morning. Although I explored a large section of the marsh I succeeded in flushing only one, and that close to the Gamble house within a few yards of the road leading to the East Goose Creek beach. Only one other bird was actually seen. It was feeding just before dark in a small open plot between the edge of the bulrushes and the beach. Mrs. Lewis called me from the house to see it. The specimen was collected.

20. *Gallinago delicata*. WILSON'S SNIPE.—On several occasions I flushed one or two in the bulrush marsh between the Creek and the road.

21. *Pisobia minutilla*. LEAST SANDPIPER.—Quite abundant on the main beach and on the oyster beds, mud flats, and shores of the Creek, at low tide, where they mingled freely with Red-backed Sandpipers and Killdeers. They were so indifferent to us that I concluded they had not recently been shot at. A few were flushed on several occasions from small, barren spaces in the bulrush marsh.

22. *Pelidna alpina sakhalina*. RED-BACKED SANDPIPER.— Fairly numerous wherever the Least Sandpipers occurred, as above stated. They, too, showed little fear of us, and when one day a Least Sandpiper was unintentionally wounded by a shot from my gun, and fluttered for some moments in the spot where shot, two Red-backed Sandpipers, moved by commiseration for a companion in distress or by some other very strong impulse, flew to the spot and hovered around the sandpiper with half extended wings for some seconds.

23. *Totanus melanoleucus*. GREATER YELLOW-LEGS.— Only three were seen. These I found practically every day of my visit, feeding in a small, shallow, muddy pond just off the road leading to East Goose Creek through one of the prairie areas about half a mile back. Whenever I saw them they were standing abreast, erect, motionless, and apparently regarding us with some degree of doubt as to whether we were hostile or not.

24. *Catoptrophorus semipalmatus inornatus*. WESTERN WILLET.— I did not attempt to collect a specimen, but there is little doubt that those I saw, about four in number, flying over the main beach, were of the western form, as the eastern bird winters extralimittally.

25. *Squatarola squatarola*. BLACK-BELLIED PLOVER.— Only one was seen, flying over the main beach.

26. *Oxyechus vociferus*. KILLDEER.— Fairly abundant about all the waters visited except the saw grass pond in the hammock, where conditions were not suitable for them. They mingled freely with the other shore birds on the beach, mud flats, and oyster beds.

27. *Aegialitis semipalmata*. SEMIPALMATED PLOVER.— Only one was seen, feeding on a mud flat in the Creek with Least and Red-backed Sandpipers.

28. *Zenaidura macroura carolinensis*. MOURNING DOVE.— Several seen from time to time feeding on the damp, sandy spaces in the bulrush marsh between the main beach and our house.

29. *Cathartes aura septentrionalis*. TURKEY VULTURE.— Fairly common around the Creek, bulrush marshes, and in the back country.

30. *Catharista urubu*. BLACK VULTURE.— Only two seen, back near the heavily timbered areas. This species occurs much less abundantly in the maritime sections than the preceding.

31. *Circus hudsonius*. MARSH HAWK.— Fairly common over the bulrush marshes and prairies.

32. *Accipiter velox*. SHARP-SHINNED HAWK.— One was seen to dash into the cluster of water oaks and cedars near the Gamble house.

33. *Accipiter cooperi*. COOPER'S HAWK.— Two were seen flying over the marsh in front of our house.

34. *Buteo borealis borealis*. RED-TAILED HAWK.— One was seen to enter a heavy woodland from an old field about two miles back of East Goose Creek, and the dead body of another was lying in front of the house of our landress near the same place.

35. *Buteo lineatus alleni*. FLORIDA RED-SHOULDERED. HAWK.—

Several were seen back in the prairies and in the immediate vicinity of the woodlands.

36. *Buteo platypterus*. BROAD-WINGED HAWK.—One seen flying over an old field about two miles back of East Goose Creek.

37. *Halæetus leucocephalus leucocephalus*. BALD EAGLE.—Several seen, from time to time, in both adult and immature plumages, flying over the Creek and adjacent marsh.

38. *Falco columbarius columbarius*. PIGEON HAWK.—One seen flying within three or four feet of the ground between ordinary high water mark and the sandy ridge along the main beach in front of East Goose Creek.

39. *Falco sparverius sparverius*. SPARROW HAWK.—Fairly abundant. Usually seen circling over or flying across the bulrush marsh between the Creek and the road.

40. *Pandion haliaetus carolinensis*. OSPREY.—Fairly common. Seen daily over all the waters of the bay and Creek, occasionally with fish in their talons. They seemed unafraid of us and on several occasions flew directly over us, although we were in plain sight of the birds for some moments before they reached us.

41. *Bubo virginianus virginianus*. GREAT HORNED OWL.—Shortly after daybreak one morning, I heard the notes of one from a heavy woodland on the western side of the Creek.

42. *Ceryle alcyon alcyon*. BELTED KINGFISHER.—Fairly common around all the salt water sections visited.

43. *Dryobates pubescens pubescens*. SOUTHERN DOWNY WOODPECKER.—Quite common in the hammocks and other wooded areas within two miles of East Goose Creek.

44. *Dryobates borealis*. RED-CKADED WOODPECKER.—One seen, in a pine grove about two miles back of East Goose Creek.

45. *Sphyrapicus varius varius*. YELLOW-BELLIED SAPSUCKER.—Three seen, in the hammocks about a mile and a half back of East Goose Creek.

46. *Phlæotomus pileatus pileatus*. PILEATED WOODPECKER.—I had the rare pleasure of seeing six of these birds, — a handsome race, once numerous but now almost in the shadow of extinction over a large area of its normal range. They were at all times noisy, as is usual with the species. Each bird exhibited a spirit of restlessness and excitement which seemed quite apart from any anxiety over our presence in their haunts. All were seen in the magnificent hammocks within two miles of East Goose Creek.

47. *Centurus carolinus*. RED-BELLIED WOODPECKER.—Quite abundant in the hammock lands, where they were somewhat noisy. On several occasions, as I stood in one of these fine hammocks, I listened to a medley of notes of Downy, Pileated, and Red-bellied Woodpeckers and Flickers. It was no mean treat, I can avouch.

48. *Colaptes auratus auratus*. FLICKER.—Not uncommon in the

hammocks where I found other woodpeckers. It is possible, if not probable, that some of these birds were of the northern form (*luteus*). Indeed, it is possible that they all were such; but as I took no specimens for examination, I have listed the resident form.

49. *Sayornis phoebe*. PHOEBE.—I was surprised to find these birds so abundant. They were usually in brushy and weedy areas sparsely dotted with medium sized pines.

50. *Cyanocitta cristata florincola*. FLORIDA BLUE JAY.—Met with in all the timbered areas visited, and on several occasions one was seen in the pines close to our house.

51. *Corvus brachyrhynchos pascuus*. FLORIDA CROW.—The crows of the East Goose Creek region, including the Fish Crows, had amalgamated for the winter, with feeding grounds somewhere west of the Creek. I saw them wending their way to these grounds, every morning, in a steady stream and returning over the same general route, to their roost east of the Creek, every evening. I did not find them to any appreciable extent beyond this beaten path. A stray one was now and then seen feeding on an oyster bed in the Creek.

52. *Corvus ossifragus*. FISH CROW.—The above note on the Florida Crow is applicable alike to this species, with this addition, that the Fish Crows seemed to be more numerous.

53. *Agelaius phoeniceus floridanus*. FLORIDA RED-WINGED BLACK-BIRD.—Numerous, in flocks around the bulrush marshes.

54. *Sturnella magna argutula*. SOUTHERN MEADOWLARK.—Fairly common in the prairies and brushy pine areas, and not infrequently flushed in the bulrush marshes.

55. *Quiscalus quiscula aglaeus*. FLORIDA GRACKLE.—These were seen in flocks several times, flying low over the Creek and adjacent marshes.

56. *Megaquiscalus major major*. BOAT-TAILED GRACKLE.—Common, in the bulrush marshes and on the oyster beds and mud flats in the Creek. They were quite noisy at all times.

57. *Poocetes gramineus gramineus*. VESPER SPARROW.—Quite abundant in an old corn field about two miles back of East Goose Creek.

58. *Passerherbulus nelsoni nelsoni*. NELSON'S SHARP-TAILED SPARROW.—A specimen taken was identified by Mr. Oberholser as of this race. They were quite common in the marsh between the Creek and the road.

59. *Passerherbulus maritimus peninsulæ*. SCOTT'S SEASIDE SPARROW.—Three specimens taken were identified by Mr. Oberholser as of this race. They were numerous in all the bulrush marshes of the mainland and in those about two miles out in front of East Goose Creek. They were difficult to flush and when flushed quickly disappeared again in the thick masses of bulrushes.

60. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—A few were seen in the low trees and growths on the edge of the saw grass pond in the hammock about a mile and a half back of East Goose Creek. I was somewhat surprised to find them in such a heavily timbered section.

61. *Spizella passerina passerina*. CHIPPING SPARROW.—Numerous in an old corn field about two miles back of East Goose Creek.
62. *Melospiza melodia melodia*. SONG SPARROW.—A few were met with in all the sections visited, except the densely timbered areas. In the bulrush marshes they were found only on and near the edges, never in the interior sections.
63. *Melospiza georgiana*. SWAMP SPARROW.—A few were seen in the bulrushes and tall weeds around the occasional marshy places in the prairies.
64. *Pipilo erythrophthalmus alleni*. WHITE-EYED TOWHEE.—A specimen taken in the sparsely timbered, scrub-palmetto and weedy area on the side of, and touching, the East Goose Creek road about a mile back, proved to be of this race, and I assume that most, if not all the Towhees seen and heard during my visit were such. They were fairly common. Lieut. Griscom includes the common Towhee in his list.
65. *Cardinalis cardinalis cardinalis*. CARDINAL.—Fairly common in the dry land areas back of East Goose Creek.
66. *Iridoprocne bicolor*. TREE SWALLOW.—Quite abundant. They were seen at various times flying low, back and forth, over the bulrush marshes; also, at times, at a greater elevation.
67. *Lanius ludovicianus ludovicianus*. LOGGERHEAD SHRIKE.—Fairly common in the open areas of dry land sparsely dotted with pines and stunted live oaks. Occasionally one visited the three or four pines close to our house.
68. *Lanivireo solitarius solitarius*. BLUE-HEADED VIREO.—Only one seen. It was in the low bushes on the sandy ridge a few feet back of ordinary high water mark near the landing at East Goose Creek.
69. *Vermivora celata celata*. ORANGE-CROWNED WARBLER.—Fairly numerous in the hammock lands.
70. *Dendroica coronata*. MYRTLE WARBLER.—Met with in large numbers wherever there were trees.
71. *Dendroica dominica dominica*. YELLOW-THROATED WARBLER.—Fairly common in the hammock lands.
72. *Dendroica vigersi*. PINE WARBLER.—Fairly common in the hammock lands and in the pine land areas.
73. *Dendroica palmarum palmarum*. PALM WARBLER.—Common both in the pine and stunted live oak areas and in the scrubby bushes on the sandy ridge at the East Goose Creek beach.
74. *Dendroica palmarum hypochrysea*. YELLOW PALM WARBLER.—Common in the pine and stunted live oak areas; usually found on and close to the ground.
75. *Geothlypis trichas ignota*. FLORIDA YELLOW-THROAT.—The only specimen taken was identified as one of this race. This handsome little warbler was common in the country immediately back of East Goose Creek where it frequented the damp areas grown up with rank weeds and grass. I also found it in the scrubby bushes and palmettos on the edge of the woodlands. A few were always seen in the saw grass around the pond

in one of the large hammocks. The rich yellow of its under-parts stood out in conspicuous contrast with the rich black of its head and cheeks as the bright rays of the sun enveloped it in the dark green maze of its haunts.

76. *Anthus rubescens*. PIPIT.—Quite common on the open sandy areas of the bulrush marshes adjacent to the waters of the bay and the Creek.

77. *Mimus polyglottos polyglottos*. MOCKINGBIRD.—Usually found in the open, sparsely timbered areas and in the brush on each side of the road. One was occasionally seen in the pines close to our house.

78. *Toxostoma rufum*. BROWN THRASHER.—Abundant in the more heavily timbered areas, especially in the hammocks.

79. *Thryothorus ludovicianus ludovicianus*. CAROLINA WREN.—Fairly abundant in the hammocks.

80. *Troglodytes aedon aedon*. HOUSE WREN.—A few were found in the brushy areas in the hammocks.

81. *Telmatodytes palustris iliacus*. PRAIRIE MARSH WREN.—Marsh Wrens were very abundant in all the bulrush marshes. Only two specimens were taken. One has been identified by Dr. Oberholser as of this subspecies and the other as of his subspecies, the Louisiana Marsh Wren (*T. p. thryophilus*), but as the A. O. U. Committee has not yet admitted the latter subspecies to the Check List, thereby leaving its validity in doubt, I have not assigned it a status in this list. The Marsh Wrens were as reluctant to emerge from the reclusive depths of their haunts as were the Seaside Sparrows, and I had some difficulty in procuring the two specimens.

82. *Certhia familiaris americana*. BROWN CREEPER.—Abundant in the hammocks, where they mingled freely with Kinglets, Titmice, Chickadees, and Downy Woodpeckers.

83. *Sitta pusilla*. BROWN-HEADED NUTHATCH.—Several found in the open, sparsely timbered, pine land areas.

84. *Baeolophus bicolor*. TUFTED TITMOUSE.—Fairly numerous in the more heavily timbered areas, especially in the hammocks.

85. *Penthestes carolinensis carolinensis*. CAROLINA CHICKADEE.—Fairly numerous in all the timbered areas, especially in the hammocks.

86. *Regulus satrapa satrapa*. GOLDEN-CROWNED KINGLET.—A few were seen, in the hammocks, but not elsewhere.

87. *Regulus calendula calendula*. RUBY-CROWNED KINGLET.—They were legion in the hammocks and some were found in the low bushes on the sandy ridge separating the bulrush marsh from ordinary high water mark on the beach.

88. *Hylocichla guttata pallasi*. HERMIT THRUSH.—Abundant in the hammocks, where they spend most of their time on and near the ground.

89. *Planesticus migratorius migratorius*. ROBIN.—I was surprised to find this bird so scarce. I saw it only once, when a small flock was discovered flying high near one of the hammocks.

90. *Sialia sialis sialis*. BLUEBIRD.—Quite abundant, in small flocks here and there throughout the sparsely timbered areas.

NOTES ON THE SUMMER BIRDS OF THE UPPER YUKON REGION, ALASKA.

BY ELIOT BLACKWELDER.

IN the summer of 1915 I made a journey to that part of eastern Alaska lying south and southwest of the Yukon River, and north-east of the Tanana. Although the object of the trip was geological, the birds were given such attention as opportunity permitted. Not being properly equipped for collecting specimens, my chief reliance for identification was a ten power Terlux binocular glass. The route traversed was along the Yukon River from White Horse in Yukon territory to Circle, thence westward across the mountains to the White Mountain range near the head of Beaver Creek. We descended Beaver Creek to the Yukon Flats and emerged upon the Yukon itself near Beaver village—about seventy miles below Ft. Yukon. From that point we returned up the river as we came.

The region has been sufficiently described by previous explorers,¹ and especially by members of the U. S. Geological Survey. In addition, ornithological investigations have been made along the Yukon. No ornithologist, however, has visited the remote White Mountains.

Most of the region is mountainous, but the relief is less than 3000 feet, and the highest peaks but little over 5000. Along the rivers there are some spacious basins. Of these the largest is the so-called Yukon Flats between Circle and old Fort Hamlin, an area of more than 7000 square miles.

Timber-line is about 2500 feet above sea level, but varies according to the direction of the slope, the nature of the soil and some

¹ Dawson, G. M., *Explorations in Yukon and northern British Columbia*; Geol. Survey of Canada Rept. for 1887-1888. Report B.

Prindle, L. M., *A geological reconnaissance of the Fairbanks Quadrangle, Alaska*: U. S. Geol. Survey Bull. 525, 1913.

Russell, I. C., *Notes on the surface geology of Alaska*: Bull. G. S. A. Vol. 1, 1890, pp. 72-99; 154-155.

Spurr, J. E., *Geology of the Yukon gold district, Alaska*: U. S. Geol. Survey Ann. Rept. 18, pt. 3, pp. 87-392, 1897.

other factors. This ill-defined limit separates the two distinct life zones of the region,— the Arctic-Alpine above and the Hudsonian below. Of the two, the latter is the larger in area and comprises all of the principal valleys. It is characterized by a dense growth of spruce, in which the trees are usually of rather small size. Near timber-line they are also of low stature. Along some of the larger streams we found spruce trees more than two feet in diameter, but they are by no means common. Alders, aspens, and willows form dense thickets along the streams and even around hillside springs. The white birch grows along the bottoms of the larger valleys, such as that of Beaver Creek. Although grass and other forms of herbage spring up in many places on the south-facing slopes, the prevailing cover of the ground is a thick carpet of brownish moss and lichens, which is evidently a botanic complex of many distinct species. This moss complex prevails not only in the spruce forest, but almost everywhere that it can gain foothold. Over certain large areas, especially where the slopes are gentle or nearly flat, it forms what is locally known as "nigger-head tundra," in which the tussocks apparently consist of certain coarse bunch-grasses, half smothered by the thick carpet of moss and lichens. Walking over this tundra is very fatiguing, owing to the insecurity of foothold and the soft yielding nature of the turf. Early in August dwarf blueberries are very abundant and characteristic of the tundra. A little later a small prostrate variety of cranberry ripens, especially in the more moist situations.

The characteristic summer birds of the spruce forests are the Hudsonian Chickadee, the Ruby-crowned Kinglet, the Robin, the Slate-colored Junco, and the Alaskan Jay. A species of rabbit is about the only mammal commonly seen, although there is evidence that the moose, black bear, lynx, and other large mammals are rather common.

At timber-line the spruce becomes scattered and stunted, through a narrow zone in which the dwarf birch and dwarf willow are abundant. The former generally grows in dense thickets, which are a serious obstacle to travel. Most of the alpine zone, however, is characterized by the usual covering of mosses and various kinds of grassy and flowering plants. In many places the gentler mountain slopes are veritable flower gardens during June and July.

In the summer this zone is inhabited by caribou, in roving groups or individuals, a few little bands of Dall's White Sheep, the Ptarmigans, Longspurs, Wheatears, Gray-crowned Rosy Finches, Pipits, and Duck Hawks. Neither reptiles nor amphibians were observed, and even insect life, with the exception of the ubiquitous mosquito, appears to be rather scarce.

The Yukon Flats are a plain covered with alternating swamps, lakes and forests, and permeated by meandering rivers tributary to the Yukon.

The luxuriant verdure of the Flats seems to pass through a definite ecologic cycle in which three stages are tolerably distinct. The newly abandoned gravel and sand bars are soon overgrown with dense willows, and the silt banks by horse-tail (*Equisetum*) reeds and tall grasses. When no longer subject to frequent overflow, the poplars, chiefly the Balm-of-Gilead and a species of aspen, grow up among the willows, smother them and form dense thickets. During the latter part of this stage, on fairly well drained land, the white paper-birch develops and may grow to a diameter of more than a foot. In the shade provided by the poplar and birch thickets, the spruce is slowly seeded and, eventually growing to a greater height, exterminates both of them by its deep shade. The permanent forest has then become a solid stand of spruce, in which the trees range up to about two feet in diameter. The characteristic small growth in its dark recesses consists of alders, the red currant, certain ferns, and a thin carpet of lichens and mosses. The bayous and swamps have a distinctive flora of reeds, grasses, and especially mosses, which apparently prevent the growth of trees even when the swamp has become solidly filled. The blueberries and the low-bush cranberries are locally plentiful on these moss-covered swamp flats and on such as have not been appropriated by the forests. The berries are, however, very much less characteristic of the Flats than of the hilly region to the south.

Although there is a definite tendency for the permanent spruce forest to spread over the entire area, actual observations show that it is decidedly patchy in its distribution, and in some areas covers only a small proportion of the ground, in comparison to the swamp, willow, and poplar floras. This is apparently due in part to forest fires, but chiefly to the annual inroads of the meandering streams.

After a spruce grove has once been mowed down by the gradual advance of a meander, it evidently requires several decades and probably more than a century for the spruce to regain its lost territory, which meanwhile has passed through the willow and poplar-birch stages.

During the short summer season the wilderness of the Flats is well stocked with birds. While drifting down Beaver and Birch Creeks we were frequently attended by solitary Loons (*Gavia stellata*) which now and then broke the general stillness with their weird and almost human cries. Several companies of Brown Cranes were seen stalking along the gravel bars, and hundreds of Geese were congregating in flocks preparatory to their southward flight. Large Horned Owls were so numerous along the willow-lined banks of Birch Creek that in one day we saw six of them in broad daylight. Probably the most common birds in the Flats are the various species of Ducks and Phalaropes which breed in countless numbers in the many scattered ponds and bayous.

The following detailed notes may have some value as coming from a remote and little known region:

Colymbus auritus(?). EARED GREBE.—Two seen August 12 on the sluggish lower course of Birch Creek in the Yukon Flats.

Gavia pacifica. PACIFIC LOON.—Several seen August 15 on the side channels of the Yukon, 50 miles below Ft. Yukon.

Gavia stellata. RED-NECKED LOON.—Common on Beaver Creek in August both in the mountains and on the flats. Often swam ahead of our raft for miles keeping at a distance of about 1000 feet and frequently voicing its weird wail.

Larus argentatus(?). HERRING GULL.—Common along the Yukon. Nests on the gravel bars of Beaver Creek, in mountains. Young able to fly were observed about August 1. This is the northwestern limit of its known breeding range.

Mergus serrator. RED-BREASTED MERGANSER.—Rather common on the larger creeks and on the Yukon. Young not yet able to fly, seen August 10. Last seen August 26 on the Lewes River near Lake Labarge.

Mareca americana. AMERICAN WIDGEON.—The most common duck on the marshy lakes of the Birch Creek flats.

Nettion carolinense(?). GREEN-WINGED TEAL.—A teal, apparently this species, rather common in the Beaver Creek flats early in August.

Nafla acuta. PINTAIL.—Two seen after being shot at Dawson, August 20.

Histrionicus histrionicus. HARLEQUIN DUCK.—A few, singly or

in pairs, were seen on the swift upper tributaries of Beaver Creek in July.

***Branta canadensis hutchinsi* (?) HUTCHINS' GOOSE.**—Nests along Beaver creek from Willow Creek to the flats. Flocks were seen on the gravel bars in the middle of August and again on the Yukon flats. Some young still unable to fly were found about August 5.

***Grus canadensis*.** LITTLE BROWN CRANE.—Common in August on Beaver creek at the edge of the flats. One that was shot had blueberries in its crop. At this time they go in small flocks of three to eight. When alarmed they give out a loud guttural croak or clatter that sounds like the rattling of a pebble in a tin can.

***Gallinago delicata*.** WILSON'S SNIFE.—One seen at Dawson August 20. Common in the marshy flats of Birch Creek, July–August 15. Has a habit of flying overhead in the evening like a nighthawk, although more rapidly, meanwhile making a strange whistling sound.

***Pisobia bairdi*.** BAIRD'S SANDPIPER.—Only four were seen.

***Helodromas solitarius cinnamomeus*.** WESTERN SOLITARY SANDPIPER.—A few were seen along Beaver Creek in the flats.

***Actitis macularia*.** SPOTTED SANDPIPER.—Widely scattered along the Yukon and its tributaries far back into the mountains.

***Lagopus* sp.** PTARMIGAN.—A Ptarmigan, with much white on the wings and tail, is common on heather slopes above timber-line. Young learning to fly July 1–10.

***Circus hudsonius*.** MARSH HAWK.—Common in the marshes of the Birch Creek flats.

***Accipiter velox*.** SHARP-SHINNED HAWK.—Common on lower Birch Creek.

***Buteo* sp.**—Large soaring hawks of unknown species from dark brown to light gray seen throughout the region.

***Archibuteo lagopus sancti-johannis*.** AMERICAN ROUGH-LEGGED HAWK.—Several seen in the Birch Creek flats.

***Aquila chrysaetos*.** GOLDEN EAGLE.—Not uncommon in the mountains west of Circle. One pair with fledglings was found occupying a bulky nest of sticks in a high dolomite crag on the southeast slope of the White Mountains, July 17.

***Haliaeetus leucocephalus alascanus*.** ALASKA BALD EAGLE.—Not very common. Two adults were seen in the White Mountains and three in the flats of Beaver Creek early in August.

***Falco peregrinus anatum*.** DUCK HAWK.—Common wherever suitable nesting sites are available among high crags or rock spires in the Yukon canyon and especially in the White Mountains. It is very pugnacious, and often attempts to drive an intruding man out of its locality by diving at him repeatedly and with incessant screeching.

***Scotiaptex nebulosa nebulosa*.** GREAT GRAY OWL.—The wings and head of a dead bird were seen in a cabin at Beaver. The bird had been killed nearby, but the date was not known. Another skin was nailed up on a house at Yukon Crossing, Y. T.

Bubo virginianus saturatus. DUSKY HORNED OWL.—A rather dark variety, with prominent sulphur patches on the sides. Fairly common everywhere but actually abundant (six seen in one day) along the Beaver and Birch Creek flats. Often hunts in daylight. The call of the male is shorter and of lower pitch than that of the female. A parent bird was seen teaching a full-grown young to hunt on August 13.

Surnia ulula caparoch. HAWK OWL.—Not uncommon in the tundra and scrub spruce areas on Beaver Creek. Seen hunting in daytime.

Ceryle alcyon alcyon. BELTED KINGFISHER.—Locally common, in the flats of Beaver and Birch Creeks, and on the Yukon only above White River. None were seen elsewhere. It requires clear water, presumably in order to see its prey.

Picoides americanus fasciatus. ALASKA THREE-TOED WOOD-PECKER.—Two seen late in July, in thick spruce forest in the bottom lands of Beaver Creek, below the mouth of Fossil Creek.

Colaptes auratus luteus. NORTHERN FLICKER.—Common in the Birch Creek flats and locally along the Yukon.

Chordeiles virginianus virginianus. NIGHT HAWK.—One seen in the upper Yukon valley, near the Hootalinqua (Teslin River), August 26.

Sayornis sayus. SAY'S PHOEBE.—A somber flycatcher apparently of this species was fairly common here and there over the region. A nest under the eaves of a road-house near Circle contained newly hatched young July 1. Several pairs were found nesting in dolomite crags above timber-line in the White Mountains.

Empidonax trailli alnorum. ALDER FLYCATCHER.—A few seen in willow thickets along the Yukon in June.

Otocoris alpestris arcticola. PALLID HORNED LARK.—Frequents the drier summits and ridges above timber-line in the mountains around the head of Beaver Creek.

Pica pica hudsonia. MAGPIE.—A few were noted on the Yukon between Lake Labarge and Stewart River, but none below that.

Perisoreus canadensis fumifrons. ALASKA JAY.—Common everywhere in the timbered areas.

Corvus corax principalis. NORTHERN RAVEN.—Common wherever food was available. Abundant along the Yukon and Upper Beaver Creek.

Euphagus carolinus. RUSTY BLACKBIRD.—A few small flocks were seen in August on the flats of lower Birch Creek.

Leucosticte tephrocotis. GRAY-CROWNED ROSY FINCH.—Abundant in July on barren dry slopes of the White Mountains above timber-line. None seen elsewhere.

Acanthis sp. REDPOLL.—Both singly and in flocks. A common denizen of the mountain valleys, especially near timber-line.

Calcarius lapponicus alascensis. ALASKA LONGSPUR.—Two males in faded nuptial plumage were seen on a grassy ridge 4000 ft. above sea-level near the White Mountains on July 15.

Calcarius pictus. PAINTED LONGSPUR.—Same habitat as the Horned Lark. Not common.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPARROW.— Commonly associated with Pipits on the mountains twenty-five miles west of Circle about the middle of July. At this season it is always above timber-line.

Zonotrichia l. gambelli. GAMBEL'S SPARROW.— This is the most common bird along Yukon canyon and in the mountains west of Circle. It became scarce about July 10, and was last seen on August 8. It probably migrates early.

Spizella monticola ochracea. WESTERN TREE SPARROW.— Common near timber-line in the mountains west of Circle.

Junco hyemalis hyemalis. SLATE-COLORED JUNCO.— Common in the spruce and birch timber everywhere.

***Passerella iliaca* (?)**. FOX SPARROW.— Several were seen in the willow thickets in the Birch Creek flats on August 12.

Petrochelidon lunifrons lunifrons. CLIFF SWALLOW.— A small colony was found nesting on the limestone cliffs on the Yukon River below Thanksgiving Creek. None were seen elsewhere.

Tachycineta thalassina lepida. NORTHERN VIOLET-GREEN SWALLOW.— Abundant along the Yukon and locally in the mountains farther west. Normally it nests among the cliffs in chinks in the rocks, but it was also seen going in and out of the Bank Swallow's burrows in the silt terraces along the river and was also using old mud nests of the Cliff Swallows. It was last seen on August 11.

Riparia riparia. BANK SWALLOW.— Nests locally in silt banks along Yukon canyon. Not abundant.

Dendroica aestiva rubiginosa. ALASKA YELLOW WARBLER.— A few were seen among the willows along the Yukon in June.

Dendroica coronata. MYRTLE WARBLER.— Rather common in the spruce woods along Beaver Creek in July and August. Last seen August 14.

Seiurus noveboracensis notabilis. GRINNELL'S WATER THRUSH.— A few were seen along the banks of the creeks in July and August.

Anthus rubescens. PIPIT.— Present everywhere on the mossy slopes above timber-line. Seen at Fort Yukon on the Flats August 17.

Penthestes hudsonicus hudsonicus. HUDSONIAN CHICKADEE.— Common in spruce forest near the White Mountains in July and in the Yukon Flats in August.

Regulus calendula calendula. RUBY-CROWNED KINGLET. Common in spruce forest around White Mountains in July. Last seen August 12.

***Hylocichla aliciae aliciae* (?)**. GRAY-CHEEKED THRUSH.— A thrush with the peculiar wiry buzzing note of the Veery was heard rather frequently along the flood plains of the Yukon River and Birch Creek, from June 10 to August 15.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH.— Very common along the Yukon in June, but much less so in the mountains in July. Last heard August 9.

Planesticus migratorius migratorius. ROBIN.— Rather scarce but

locally common, as in mountains between Miller House and the White Mountains. It became scarcer about July 20, and was seen last on August 14.

***Ixoreus naevius meruloides*.** NORTHERN VARIED THRUSH.—A few were found nesting in the thick spruce forest along Fossil Creek in July at 2000 ft. elevation.

***Saxicola oenanthe oenanthe*.** WHEATEAR.—The bird has the same habitat as the Pipit and, like it, flits from rock to rock on the mossy slopes above timber-line. Young just learning to fly, July 15. Not seen in flocks.

NOTES ON SOME BIRDS OF THE OKANAGAN VALLEY, BRITISH COLUMBIA.

BY J. A. MUNRO.

***Aechmophorus occidentalis*.** WESTERN GREBE.—Migrant and scarce winter resident; April 23, 1911, is the earliest spring record. In the spring of 1914 they were very plentiful. May 12 was a warm still day, without a breath of wind or a ripple on the surface of the lake; from the shore near Okanagan Landing, one can see down the lake for five miles, to where a rocky point interrupts the view. Small bands of Western Grebe were scattered everywhere, the sun glittering on their white under-parts. I estimated that there were eight hundred, on this small portion of the lake. In the fall, they are less common and more regular in their appearance. The earliest record of arrival is September 5, and the latest, September 28.

***Colymbus holboëlli*.** HOLBÖELL'S GREBE.—Abundant summer resident: a few winter on Okanagan Lake. During April, flocks of these birds congregate on Okanagan Lake, keeping well out from the shore, and engage in a noisy courtship, attended by much splashing and diving. For several weeks, their yelping call can be heard day and night. They breed in suitable places on all the marshy lakes of this district; frequently nests are found within thirty feet of each other, but I have never found them breeding in colonies. On May 15 and June 8, 1916, ten nests were found in the tules, fringing an alkaline lake. In every case there was a Coot's nest within a few yards.

***Larus argentatus*.** HERRING GULL.—A common winter resident on Okanagan Lake; they make daily trips the length of the lake, following the steamer. Unlike the Herring Gulls of the Great Lakes or the sea-coast, these birds are quite wary; it is generally impossible to get within gunshot range. Several times I have watched them following a flock of

feeding Loons, swimming beside them and when left behind by the faster moving Loons, rising from the water and flying to the centre of the flock again. It seems hardly possible that they would be able to steal fish from such a strong, active bird as the Loon.

Larus philadelphia. BONAPARTE'S GULL.—Common migrant, much more numerous in the spring, when they arrive in a body and remain only two or three days. Stragglers during the spring migration are unusual. In 1912, 1913 and 1914, they arrived at Okanagan Landing on May 4; in 1915 on May 5, and in 1916, twenty appeared on April 29, and the large flock arrived again on May 4. May 12 is the latest spring record. The fall migration is more irregular; juvenals arriving about the middle of August and adults a little later. They are seen until the middle of September, September 20 being the latest record. There are occasional stragglers in the summer; an adult in breeding dress and two juvenals being noted on July 20, 1915, and on July 22, 1917, an adult in breeding dress was collected.

Usually they are quite fearless; and on a still spring day I paddled into a flock of about one hundred, on Okanagan Lake. They rode buoyantly on the surface, wing-tips and tail touching, and held high above the body. Their method of feeding suggested the Northern Phalarope, swimming in a jerky fashion from side to side and picking minute objects off the water. Their voices were soft and resonant, like a note struck with the fingers, on the muted string of a violin.

Grus mexicana. SANDHILL CRANE.—Common migrant, occasionally breeds. The large flocks seldom stop in the spring but sometimes do so in the fall. October 4, 1917 was a violently windy day and a large number of Cranes both *G. mexicana* and *canadensis* were forced to alight on some open range-land near Okanagan Landing, where they remained until shot at.

In the evening of May 20, 1915, a flock of fifty-seven flew north over Okanagan Lake. They moved for a time in a compact flock, and then strung out in single file. Sometimes they flew in the form of the letter U, a half circle, and again the flock took the form of the letter S.

Dendragopus obscurus richardsoni. RICHARDSON'S GROUSE.—Abundant resident in normal years. Their numbers were greatly reduced during the past two years, by cold, wet springs and the ravages of an intestinal parasite.

The Blue Grouse begin to mate about the end of March, when the snow has melted from the lower hills. The males are then quite fearless and one can walk to within a few feet of the hooting birds. While calling, the body is flattened and held close to the ground, the wings are dropped, the head is sunk between the shoulders and the widely spread tail is held at right angles to the body. When they are in this position the fan-like tail entirely conceals the body from one standing behind the bird. The feathers on the neck are folded back, showing the white underparts in vivid contrast to the naked, orange-red, palpitating skin of the air-sacs. The sacs can

be seen to rise and fall as the bird draws in air and then slowly lets it out. The combs are brilliant yellow and much swollen. While inflating the air-sacs the bill is held wide open. The mating call might be rendered as, whoo, "WHOO whoo-oo, whoo WHOO, whoo." Unlike the Blue Grouse of the coast region, this call is soft and has no great carrying power. There is also a single note, "hoop," that can be heard for a great distance. I have never been able to discover if it is the male or the female that uses the single hoot. After calling, the male may strut a few yards, in the same attitude as described, and with breast almost touching the ground. They then look more like a mammal than a bird. While mating, the males are utterly indifferent to danger and many are killed by coyotes and goshawks.

The eggs are laid early in May. The nests are usually shallow depressions in the ground, lined with pine-needles and a few feathers; some have little or no lining. A favorite site for the nest is on a bunch-grass bench, on a steep mountain side, close to pine or fir trees. Sometimes they build on the loose sand under a pine tree. One nest found on May 13, 1915, and containing nine partly incubated eggs, was under the "A" of a rail fence close to a wagon road, through open woods of yellow pine. The following year I found a nest with ten eggs, under the same fence, close to where the first one had been located.

May 31 is the earliest record for newly hatched young. There is considerable mortality in the young birds and several weeks after hatching the coveys have generally dwindled to six or eight. They grow fast and when the size of Meadowlarks will fly as straight and true as a Quail. When a covey of young is flushed the female will not rise until the young have alighted in the nearby trees. When in the trees they assume the characteristic attitude of the adult, standing parallel to the branch, with tail slightly raised.

The young are full grown by August 15. They leave the timbered country shortly before this to feed on grasshoppers along the margins of wooded draws and coulees, on the open range. During the middle of the day they can be seen, sunning themselves on some rock in a prominent place where they can watch for enemies. They are quite tame at this season and as one approaches a feeding covey, they will stiffen and remain in rigid postures until one is within a few yards, and then rise and fly into the nearest tree.

About September 1, the coveys begin to "pack" and are then found principally in the stands of yellow pine (*Pinus ponderosa*). They are then feeding chiefly on the large oily seeds of this tree, picking them off the ground underneath the trees. They still eat many grasshoppers, catching them in the open places, early in the morning while the insects are sluggish. When the supply of fallen pine seeds is exhausted, they eat rose hips, snowberries and red and black haws.

About the middle of October, the packs go into the thick stands of Douglas fir and remain there until the spring, eating fir needles exclusively. Their flesh becomes impregnated with the flavor of fir and is quite uneatable.

If not disturbed too much they will remain in the same clump of trees all winter, not coming to the ground for days at a time. They sit very close and often will not leave the trees until one throws stones or branches at them. The ground under one of these roosting trees, in the spring, resembles a poultry yard with accumulation of droppings.

During October, Blue Grouse become quite wild. When flushed they invariably fly down hill and alight in thickly foliated firs or pines. Until one knows what to look for, they are very hard to find in these trees. They stand parallel with the branch, perfectly rigid, neck stretched, tail closed and slightly elevated—a strained and most ungraceful pose.

They are fond of sitting on rocky ledges or slide rock, on sunny days, and match the color of the rocks so perfectly that one seldom sees them until they flush. A Blue Grouse thundering down a steep mountain-side, through heavy timber, affords the most difficult sporting shot of any Canadian Grouse.

Circus hudsonius. MARSH HAWK.—Common summer resident; a few remain through the winter. Two nests were found in the tules on the shore of Swan Lake.

May 15, 1916. Five eggs, incubation advanced. Nest in a clearing in the tules, about four feet square, that had been trampled down by the bird; composed of a pile of grass and weed stalks on a foundation of sticks, that raised the nest above the wet ground. The grass was placed all the same way, a shallow depression at one end held the eggs.

May 18, 1916. Three fresh eggs, one a third larger than the others, nest similar to number one, but slightly smaller.

Several times I have seen a Marsh Hawk strike at a Sandpiper. A female shot in September, 1912, had the remains of two Solitary Sandpipers in her stomach. On a foggy September morning, I once saw a Marsh Hawk dash into a flock of Green-winged Teal and try, unsuccessfully, to lift one from the water.

Buteo borealis calurus. WESTERN RED-TAIL.—This is the characteristic hawk of the lower mountains. They are equally at home in the dense coniferous forests at the edge of cultivated land, in the open park country of the yellow pine (*Pinus ponderosa*) or in the midst of deep canyons and rock cliffs.

The Red-tail arrives in the Okanagan early in May and leaves in October. I have no winter records. Various small mammals, such as ground squirrels (*Citellus*), pine-squirrels (*Sciurus*), and pikas (*Ochotona*), afford an ample food supply and one would expect Buteos and raptors generally, to breed here in large numbers; but such is not the case. Red-tails are probably the most common of the larger hawks (except during the periodic invasions of Swainson's Buzzards in big grasshopper years) but they are not abundant, and one does not see the large migrations that are a feature of the coast-belt of British Columbia.

The same nests are used for several years, usually built in tall coniferous trees, forty to sixty feet above the ground. A site commanding a view of open range or valley is preferred. The following nests are typical.

May 22, 1917. A large, bulky nest of sticks lined with black tree-moss (*Alectoria jubata*) and some down from the birds' breasts; forty feet from the ground in a tall Douglas fir, free of branches for the first twenty-five feet. This was in open woods of Douglas fir and yellow pine, overlooking a small creek and a wide area of hay land. The three partly incubated eggs were chalky-white, sparingly blotched with pale brown. Both birds alighted in nearby trees and did not fly over the nest or make any hostile swoops at the collector.

May 28, 1917. Nest twenty-two inches in diameter, made of spruce sticks and lined with spruce twigs and pale green tree-moss or lichen (*Evernia vulpina*). This was at the top of a spruce, broken off, sixty feet from the ground. The rather heavy spruce sticks composing it rested on the broken portion of the tree and on the thick limbs directly below. The spruce was a solitary one, at the edge of a cottonwood forest, bordering a stream and pasture land, in a deep, narrow valley. There were two eggs, in an advanced stage of incubation; one was nearly pure white and the other faintly blotched with light brown. The male had been shot two weeks before. While the tree was being climbed, the female sat in a cottonwood forty yards away and screamed repeatedly but did not come any closer to the nest.

The following notes refer to a pair of Red-tails that had their eyrie on the face of a sheer cliff, three hundred feet high. As well as I could see with binoculars, the nest was made entirely of sticks and was built, none too securely, on a small ledge, fifty feet from the top of the cliff. This cliff formed one side of a deep canyon, along the base of a steep, rugged mountain. Both sides of the canyon, below the cliffs, were piled high with slide-rock, the home of hundreds of Pikas (*Ochotona*). The top of the lowest side of the canyon was fringed with tall Douglas fir and Murray pine. On the other side, back of the three-hundred-foot cliff containing the eyrie, the mountain rose, almost sheer, for another six hundred feet.

June 8, 1915. On this date, when the eyrie was first discovered, there were two or three young, just emerging from the down — their heads could be seen above the rim of the nest. The female was kept under observation for several hours and did not fly to the nest. The male was heard in the distance but did not come into the canyon. The female was greatly excited, flying in short circles over my head and screaming constantly. She frequently alighted on the top of a dead, stunted fir, in the canyon, below the eyrie. A pair of Western Robins attacked her several times and drove her from the tree.

May 27, 1916. I was unable to visit the eyrie again until the following year. On May 27, there were two downy young. The old birds were more hostile than in the previous year. When I first entered the canyon, the male was flying about the face of the cliff, screaming fiercely, a long-drawn-out hissing scream, like the escape of exhaust steam from a locomotive. As I scrambled over the talus at the foot of the cliff, he swooped at me several times from a great height, slanting down at tremendous speed

on set wings, with a loud tearing noise; when close over my head, he would stop short, and then mount straight into the air, head first, in a "climbing" position. After rising in this fashion for twenty or thirty feet, he would assume a normal position and mount in a succession of spirals. The female appeared with a large snake twisting in her claws and flew straight to the nest, not having seen me. After a few minutes spent in the nest, she joined the male and they both flew into one of the firs on the top of the canyon. It was impossible to see what disposition she made of the snake.

Shortly after this, one of the young raised itself above the rim of the nest and after flapping its naked wings several times, raised itself over the nest rim and ejected a stream of excreta down the face of the cliff.

No refuse, which would have told of their food habits, was found below the nest, but it is probable that Pikas formed a large portion of their diet.

July 31, 1916. The two young were seen, soaring over the canyon.

Buteo swainsoni. SWAINSON'S HAWK.—Regular summer resident, arriving about the middle of April and leaving in August; the latest record is September 6, I have no winter records.

During the summers of 1913, 1914 and 1915, there was a serious local interruption of large crickets and grasshoppers. These were found in countless hordes on the open range, overlooking the city of Vernon, and ate every green thing on the hills. In the summer of 1915, I noticed that they were attacked by a reddish colored parasite that clustered on the head and thorax. This must have killed great numbers, as they were not so plentiful the following two years. During July and August when grasshoppers were most abundant, the Swainson's Buzzards gathered in unusual numbers, for this country, and fed exclusively on these insects. Juveniles were in the majority but there was a sprinkling of adults, some of them in the dark phase.

Three juveniles collected on July 15, 1915, were in the spotted plumage and were moulting the secondary feathers on the wings. Adults collected were in various stages of moult. Their stomachs were distended with crickets and grasshoppers. These insects, when they are available, seem to be preferred to any other food. Their abundance and the ease with which they are captured, is suitable to the rather sluggish temperament of this Buteo. They occasionally take birds, as Major Allan Brooks found seven downy Ruffed Grouse in the crop of a breeding female; but I think they catch fewer small mammals than does the Red-tail.

On July 16, 1914, I saw a flock of forty in all plumages, on the open range. Some were wheeling and circling close to the ground, others were standing, gorged, on fence posts, in the grass, and on the face of a small butte.

While hunting, they are often persecuted by Kingbirds, both *Tyrannus tyrannus* and *verticalis*. In trying to escape from their tormentors, they sometimes turn completely over, sideways, in a "loop the loop" movement. I once saw two Swainson's Buzzards fly towards each other, fasten their claws together and drop several yards, rolling over and over.

***Asio wilsonianus*.** LONG-EARED OWL.—On April 19, 1917, I found a female occupying a new crows' nest and sitting on one egg. Broken crow's eggs on the ground below the nest indicated that she had evicted the original owners. On April 30, the crows were again in possession and the nest contained four crow's eggs. The owl then laid four eggs in an old crow's nest, fifty yards from the first one. These eggs were collected on May 8, and the owl moved to a third crow's nest in the same patch of brush. On June 23, the nest contained two half-grown young.

***Glaucidium gnoma gnoma*.** PYGMY OWL.—Common resident. This is the easiest of the owls to call. They will come readily at any time of the day, and from long distances to an imitation of their call. They approach the caller with short flights, from one tree-top, to another slightly nearer. When in a tree directly over the caller's head, a further call will bring them down to the lower branches, often within a few yards. Often two or more will come from different directions. On Vancouver Island I once called up four at one time. They are usually followed by an excited crowd of Chickadees, Nuthatches and other small birds, that keep darting at the owl as long as it is in the open. When answering the call, they usually sit in a conspicuous position, at the top of a tree or on a dead branch. The Pygmy Owl must be one of the greatest enemies of small birds, as an imitation of its call will excite every bird in the neighborhood, while they pay little attention to the call of a "Scops" owl or a Saw-whet.

The only nest I have found was in an old woodpecker's hole, thirty-five feet above the ground in a western larch. There were seven downy young in this nest. This was in a thick forest of Murray pine, Douglas fir, and western larch, where they are more plentiful than in the yellow pine stands at lower altitudes.

***Picoides americanus fasciatus*.** ALASKA THREE-TOED WOODPECKER.—This species is resident and fairly common in Murray pine, Western larch, and spruce forests. I have never found them in yellow pine or Douglas fir country. They prefer the burnt areas of timber, and specimens collected are generally stained with charcoal on the under-parts. During the nesting season the males call with a rippling tattoo from the very top of the tallest dead tree, near the nesting tree. This calling is usually done in the early morning. On May 28, 1917, I found a nest that had just been finished, thirty feet from the ground in a dead Murray pine. The entrance was smaller than would be expected, slightly over one and a half inches, and the hole about fourteen inches deep. No eggs had been laid and as I had to leave the locality that day I was unable to revisit the nest. A half grown male collected on June 17, 1916, showed a few scattered yellow feathers on the crown.

***Stellula calliope*.** CALLIOPE HUMMINGBIRD.—This hummer frequently nests in the same tree for several years in succession. A dead lichen covered branch of maple or birch is often chosen. The nests straddle the branch, and I have never seen one that was pensile. The two nests described were probably lower down than is usual.

June 6, 1911. Two eggs, incubation started. Nest twenty feet from the ground on a drooping branch of a dead maple, in a birch and maple draw in the mountains. Outside of nest composed of lichen and small shreds of moss, presenting a ragged appearance from below. The lining was of felted cottonwood down. This nest was discovered through the angry, excited actions of the female. She buzzed around my head, as I approached the tree, and would not leave the vicinity of the nest.

June 30, 1916. Found female sitting on two partly incubated eggs. Nest of lichen and plant down, and lined with plant down; saddled on a small dead twig of a Douglas fir, on the outside of the tree, seven feet above the ground. A few inches above the nest was a thick spray of live fir, effectually shielding the sitting bird from the hot sun. This was on a steep, rocky mountain side among thick timber.

A birch and maple draw is the favorite home of *Stellula calliope*, and one can often see six or eight, buzzing around a birch tree, which a Red-naped Sapsucker has girdled.

Tyrannus verticalis. WESTERN KINGBIRD.—Common summer resident. The earliest record during seven years is April 25, 1911, and the latest May 13, 1912. Their departure in the fall is more uniform; August 17, 1911, being the earliest and August 27 the latest. In five other years, there was a difference of only three days in their departure, August 20 being an average date.

They nest in most curious places. For two seasons, a pair built in the eaves-trough of my house, directly over the vent. Both years the eggs were destroyed by rain storms and washed into the rain barrel. A window ledge is a favorite nesting site. The residents along some of the country roads nail up small soap or starch boxes on their gate-posts for the reception of milk bottles, etc.; these are frequently used as nesting sites. I have known them to build on a ledge above the kitchen door of a farm house, which was opened and shut fifty times during the day. Frequently they use abandoned Flicker holes, or the roughened, decayed top of a fence post.

The nests are well made of roots, weed-stalks, string, etc., lined with plant down and horsehair or sheep's wool when it can be found. Four is the usual number of eggs laid.

Sayornis sayi. SAY'S PHOEBE.—Summer resident, much more common the past three years. A nest containing young, found on May 25, 1916, was built largely of dry, lace-like *Potamogeton*, that had been washed up on the beach and bleached white by the sun. The nest was inside a vacant tent, on a wooden cross-support, near the door.

Myiochanes richardsoni richardsoni. WESTERN WOOD PEWEE.—Common summer resident; the earliest record is May 9, 1916, and the latest departure September 13, 1915. They breed commonly along roadsides, preferably in aspens (*Populus tremuloides*). They are late in breeding. The earliest record for a full complement of eggs is June 22, 1916. The nests are usually rather flimsy, made of plant fibres, fine weed stalks, cobwebs and perhaps a few pieces of lichen. They are usually built

saddle fashion on a rather large limb, generally at a crotch, but I have found two that were built in upright forks like a Yellow Warbler's nest. These two nests were in half-dead peach trees in an orchard.

On June 20, 1911, a nest with four eggs was found in black cottonwood (*Populus trichocarpa*) on the lake shore. The eggs were eaten and the nest partly destroyed, probably by a White-footed Mouse. They built another nest in the same tree, and, on July 4, I collected the nest and three eggs. While climbing the tree, the female flew past my face several times, snapping her mandibles. This pair then built a third time in a poplar a few yards from the cottonwood and the nest was completed in three days. I was unable to follow the vicissitudes of this family any further.

Pica pica hudsonia. MAGPIE.—Abundant resident in the river bottoms and on the yellow-pine benches but are less common in the forests. Little good can be said of these birds; they are probably the worst egg thieves of all the Corvidæ. If one leaves any game cached in the woods they are sure to find it and eat the greater portion. In trapping small mammals in a Magpie country one must go over the trap line frequently or many specimens will be eaten. I received a reliable report of a small band of Magpies that had picked large holes in the backs of several young shoats. Their habit of raising a hue and cry, after any owl that makes its appearance, is sometimes of great use to the collector. As they raise large broods, laying six to eight eggs, and have few natural enemies they are increasing rapidly.

Except in the nesting season, they are exceedingly wary and well able to look after themselves. Frequently they are caught in traps set for mink and very often in coyote traps, set near a carcass. They are easily taken by poisoned baits.

In the spring, they have the Cowbird habit of walking over range horses' backs and picking off the fat wood-ticks.

They usually nest in colonies, in patches of nearly impenetrable Black Haw (*Crataegus douglasi*) or in brushy coulees, on open hillsides. The following nest can be taken as typical.

May 14, 1915. Seven fresh eggs; nest of mud and sticks lined with grass and fine roots, eight feet from the ground and near the top of a Black Haw. The outer covering of the nest, about three and one half feet in height, made of thorny Black Haw branches, with an entrance at each side, six inches above the nest proper.

The birds return to the same locality every year and repair the old nests, if they are not too dilapidated. April 22 is the earliest record for a full set of eggs.

When the young are nearly full grown, they gather in large flocks on the bare hillsides and feed on grasshoppers and crickets. This of course is in their favor but cannot balance their evil deeds.

Nucifraga columbiana. CLARK'S NUTCRACKER.—Resident; their abundance depending on the seed crop of the Yellow Pine (*Pinus ponderosa*). Like all corvine birds, they are exceedingly curious and a passing deer or coyote will attract their attention so that the position of game can

often be located by their excited cries. They come readily to an imitation of the call of the Pygmy Owl or the Horned Owl and will investigate the caller at close range.

Their food is largely the seed of the Yellow Pine during the fall and winter but they are omnivorous at other seasons. I once saw a single bird feeding on the carcass of a Bushy-tailed Wood Rat (*Neotoma columbiana*), Mr. C. De B. Green tells me they have the corvine habit of eating birds' eggs. Several nests of Hermit Thrushes, Horned Larks and Pipits, that were under observation, above timber line on Apex Mountain, were destroyed by a pair of Clarke's Nutterackers.

Three nests were found on March 9, 1912, by Major Allan Brooks, assisted by the writer. This was in Yellow Pine country; a series of wooded benches overlooking Okanagan Lake. There was some snow on the ground, the days were warm, with bright sunshine and the nights were frosty.

Number one. Nest loose and bulky, of rotten wood and desiccated pine grass on a platform of stout pine twigs; fifty feet from the ground and eight feet from the trunk, in a Yellow Pine. The female was sitting on two fresh eggs.

Number two. Nest of the same materials as number one. Forty feet above the ground in a Yellow Pine. Female sitting on two fresh eggs.

Number three. Twenty-five feet from the ground and twelve feet from the trunk of a Douglas Fir. This nest was found by watching one of the birds gathering sheep's wool that had caught on a barbed wire fence, and carrying it to the nest. The three partly incubated eggs were collected ten days later. The young are faintly spotted with white on the underparts.

Pipilo maculatus montanus. SPURRED TOWHEE.—Common summer resident. I have a report from a reliable observer, of a single bird, wintering at Sunnywold, fifteen miles south of Okanagan Landing; and a bird seen here on February 17, 1917, had probably been in the vicinity all winter. March 20 is the average date of their arrival and October 10 of their departure. They raise two and possibly three broods; the earliest date for a full set of eggs is May 3, 1916. A nest found on July 22, 1913, containing newly hatched young was possibly a third brood.

Juveniles in various stages of moult swarm in all the patches of brush, along the lower hills from the last of May until September. The irides of the young are first bluish, practically without color, then hazel and later dull orange.

The alarm note of the adults is similar to the Catbird's "meow."

The situation and material of the following nest is typical.

May 19, 1917. Four eggs; incubation started; nest on the ground near shore of lake and thicket of hawthorns; made of the inner bark of cottonwood, wild sunflower and other weed stalks and lined with dry grass.

Myadestes townsendi. TOWNSEND'S SOLITAIRE.—Common resident nesting on the ledges and crevices of rock bluffs. On June 11, 1917, while motoring along a narrow road above the Tulameen River, past a rock

cutting, a Solitaire flew off her nest and passed in front of the car. Her nest was in a small crevice in the rock cutting, five feet above the road, and would have been on the level of a man's eye, walking along the ground. The nest was built of dry grass, twigs, fine roots and moss, lined with fine grass and contained four partly incubated eggs.

The young are slim handsome birds conspicuously spotted with silvery buff on the lower parts, head and back.

The alarm note is similar to the "chuck chuck" of the Hermit Thrush. In a recent number of the Condor,¹ Mr. Forrest S. Hanford states, that during thirteen years, he has heard the Solitaire sing only five times. In this district, they sing quite freely, during the nesting season; generally perched on the very top of a Douglas fir or Murray pine. I have frequently heard them singing in the winter.

In the winter months their food is largely the acrid berries of the dwarf juniper (*Juniperus occidentalis*).

DESCRIPTION OF A NEW SUBSPECIES OF *PIRANGA* *HEPATICA* SWAINSON.

BY HARRY C. OBERHOLSER.

THE geographic range of *Piranga hepatica hepatica*, as now understood, extends from Arizona to southern Mexico. Examination of a series of 115 specimens of this species in the United States National Museum, including the Biological Survey collection, reveals the existence of an additional and undescribed subspecies from the southwestern United States. This we venture to name

Piranga hepatica oreophasma, subsp. nov.

Chars. subsp.—In general, similar to *Piranga hepatica hepatica*, from central and southern Mexico, but larger, with a relatively somewhat smaller bill; male with upper-parts darker, the back also more reddish, and ventral surface more deeply colored; female with upper and lower parts rather darker, the back averaging also somewhat more grayish (less greenish).

¹ Vol. XIX. January-February, 1917, page 13.

Description.—Type, adult male, No. 168397, U. S. Nat. Mus.; Pine Canyon, at 6000 ft. altitude, Chisos Mountains, central western Texas, June 3, 1901; Harry C. Oberholser; original number, 290. Forehead and anterior portion of crown, dark scarlet; occiput rather light Brazil red; cervix light brick red; back and scapulars, between ochre red and brick red, somewhat mixed with neutral gray; rump neutral gray washed with the reddish of back; upper tail-coverts light brick red; tail Natal brown, the rectrices edged externally with dragon's-blood red; wings fuscous, the superior coverts rather paler, the primaries, secondaries, median and lesser coverts, edged with dragon's-blood red, the greater coverts and outer webs of the tertials, with dull coral red or dull light coral red; supraloral streak scarlet; lores and maxilla brownish gray, a little mixed with buffy white; suborbital region grayish white somewhat mingled with grayish; auriculars dull neutral gray, washed with light Brazil red; a broad stripe down the sides of the neck back of the auriculars, of the same color as the cervix; a broad stripe behind this, like the back; extreme anterior point of chin creamy white; sides and flanks between dragon's-blood red and scarlet; thighs dragon's-blood red; remainder of under parts scarlet, paling on the anal region and lower tail-coverts to peach red (a patch of primuline yellow on the middle of the abdomen is doubtless adventitious); edge of wing light scarlet; lining of wing dark shrimp pink.

Measurements.—Male:¹ wing, 103–106 (average, 104.5) mm.; tail, 81.5–86.5 (84.6); exposed culmen, 16–17.8 (17.1); tarsus, 21–23 (22.1); middle toe without claw, 15–16.5 (16.).

Female:² wing, 98–101 (average, 99.3) mm.; tail, 79.5–84.5 (82.7); exposed culmen, 16.2–19 (17.5); tarsus, 21.5–23.3 (22.3); middle toe without claw, 14.5–16 (15.4).

Geographic distribution.—Southwestern United States to central Mexico. Breeds in the Transition Zone of the mountains, north to north central New Mexico and Beaverdam, northwestern Arizona; west to western Arizona, Sonora, Sinaloa, and Tepic; south to central western Jalisco; east to western Jalisco and southeastern Coahuila, Santa Catarina in central western Nuevo Leon, central western Texas, and east central New Mexico. Winters north to southern Sonora, and south to Michoacan and the State of Mexico.

Remarks.—The race of *Piranga hepatica* here newly distinguished is not so dark above or below as *Piranga hepatica dextra*³ from eastern Mexico, and, furthermore, is considerably larger; while the female is lighter and less greenish above. Specimens from Texas, New Mexico, and Arizona are largest; those from

¹ Five specimens, from Texas, New Mexico, and Arizona.

² Five specimens, from Texas and Arizona.

³ Bangs, Proc. Biol. Soc. Wash., XX, March 27, 1907, p. 30.

Batopilas, Chihuahua, and Alamos, Sonora, are slightly smaller, though in color not different. Birds from the Sierra Guadalupe in Coahuila are of the same size as those from Arizona, but are somewhat darker, thus indicating their vergence toward *Piranga hepatica dextra*. A single adult male from Santa Catarina, Nuevo Leon, although not very far east of the Cerro de la Silla, where *Piranga hepatica dextra* occurs, is of the same color as the Arizona form, but is of rather smaller size, inclining, as would be expected, toward *Piranga hepatica dextra*, although apparently, so far as it is possible to judge from a single example, nearer *Piranga hepatica oreophasma*. Examples from Atenguillo and San Sebastian, Jalisco, together with those from Santa Teresa, Tepic, are just about half way between the present race and *Piranga hepatica hepatica*, the males being perfectly intermediate in size, though in color like Arizona birds; while the female is of the size of *Piranga hepatica hepatica*, but in color nearer the Arizona race. As a whole, however, these birds are probably best referable to *Piranga hepatica oreophasma*.

The Hepatic Tanager was originally described¹ from a specimen taken at Real del Monte, Hidalgo, Mexico; and, therefore, the birds from central and southern Mexico must be regarded as typical. Mr. Outram Bangs has already described² the small, dark form from eastern Mexico as *Piranga hepatica dextra*; but in so doing, made the statement, through a misunderstanding, on the ostensible authority of Mr. E. W. Nelson, that Real del Monte, the type locality of *Piranga hepatica hepatica*, was the same as Temascaltepec, likewise one of Swainson's localities. This, of course, is not the case, since Real del Monte is in southern Hidalgo, not far northeast of the city of Pachuca; while Temascaltepec is situated at some distance southwest of the city of Mexico, and in the state of Mexico.

There are thus apparently three recognizable subspecies of *Piranga hepatica*. The range of the new one here described has been given above, but since the distribution of the others has been altered by the present separation, their ranges with the necessary corrections are added below.

¹ *Piranga hepatica* Swainson, Philos. Mag., new series, I, No. 6, June, 1827, p. 438 (Real del Monte, Hidalgo, Mexico).

² Proc. Biol. Soc. Wash., XX, March 27, 1907, p. 30.

Piranga hepatica hepatica.—Central and southern Mexico, north to San Luis Potosi; west to central Jalisco (Guadalajara) and western Michoacan; south to Guerrero and Oaxaca; and east to Oaxaca, Tlaxcala, and Hidalgo.

Piranga hepatica dextra.—Eastern Mexico, north to Cerro de la Silla in Nuevo Leon; west to the same locality, Huauchinango in northwestern Puebla, southeastern Puebla, and the eastern border of Oaxaca; south to Chiapas and Guatemala; and east to Guatemala, Chiapas, and Vera Cruz.

The localities from which specimens of *Piranga hepatica oreo-phasma* have been examined are listed below:

Arizona.—Hualapai Mountains, 6300 feet (July 8, 1902); Fort Whipple, (June 21, 1892 [nestling]); Fort Huachuca (May 7 and 11, 1892); 25 miles northeast of Rice, Nantan Plateau (May 11 and 12, 1916); Young's Ranch, Mingus Mountain, at 7500 feet, 6 miles southeast of Jerome (August 21, 1916); Ash Creek, Graham Mountains, 6100 feet (May 16, 1914); Graham Mountains, 6400 feet (May 13, 1914); Dragoon Mountains (May 4, 1895); Flagstaff (May 27, 1888; June 21, 1886); Mud Tanks (October 3, 1884); Rock Canyon (July 12 and 20, 1874); San Francisco Mountain (September 4 and 7, 1889; August 31, 1889; June 3, 1887); 20 miles south of Apache (September 8, 1873); Crittenden (August 26 and 27, 1874); Fort Verde (August 5, 1887); Huachuca Mountains (July 27, 1893; August 2, 1893; September 10 and 16, 1893); Gardner's River, Santa Rita Mountains (June 18, 1884); Santa Rita Mountains (June 7, 10, and 28, 1884; July 5, 1884).

New Mexico.—Animas Peak, Animas Mountains, 8000 feet (August 3, 1908); southeast slope of Capitan Mountains (July 22, 1903) Burro Mountains (September 16, 1908); east side of San Luis Mountains (June 23, 24, and 26, 1892); west side of San Luis Mountains (July 13, 1892); San Luis Mountains (September 4, 1893); Big Hatchet Mountains (May 19 and 21, 1892); Dog Spring, Grant Co. (May 31, 1892); Grafton; Zuni Mountains (August 31, 1857).

Texas.—Pine Canyon, 6000 feet, Chisos Mountains (June 3, 1901) [type]; June 7, 1901); Limpia Canyon, Davis Mountains (July 12, 1901).

Chihuahua.—San Luis Mountains (August 12, 1908); near Batopilas (October 4, 1898).

Coahuila.—Sierra Guadalupe (April 24, 25, and 27, 1902).

Jalisco.—Atenguillo (March 5, 1897); Ocotlan (January 4, 1903); San Sebastian (March 21 and 22, 1897).

Mexico.—Amecameca (February 18, 1893).

Michoacan.—Mt. Tancitaro (February 24, 1903).

Nuevo Leon.—Santa Catarina (April 13, 1902).

Sinaloa.—Culiacan (March 17, 1899); Mazatlan.

Sonora.—Near Alamos (January 6, 1899).

Tepic.—Santa Teresa (August 8 and 12, 1897).

Comparable detailed measurements of *Piranga hepatica oreo-*
phasma and *Piranga hepatica hepatica* are as follows:

MEASUREMENTS OF SPECIMENS OF *Piranga hepatica oreophasma*.

U. S. Nat. Mus. No.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed Culmen.	Tarsus.	Middle toe with- out claw.
168379	♂	Pine Canyon, 6000 ft., Chisos Mts., Texas. ¹	June 3, 1901.	H. C. Oberholser.	103	81.5	16.8	22	16.5
205566	♂	Burro Mts., New Mex.	Sept. 16, 1908.	E. A. Goldman.	103	86.5	17.8	21.5	15.
186889	♂	Southeast slope Capitan Mts., New Mexico.	July 22, 1903.	J. H. Gaut.	105.5	85	17.5	23	16.5
137972	♂	Fort Huachuca, Ariz.	May 7, 1892.	A. K. Fisher.	106	85	16	21	16
137973	♂	"	May 11, 1892.	"	105	85	17.5	22.8	16
Average of five males									
					104.5	84.6	17.1	22.1	16.0
168477	♀	Limpia Canyon, Davis Mountains, Texas.	July 12, 1901.	H. C. Oberholser.	98	84	19	22.2	14.5
168332	♀	Pine Canyon, 6000 ft., Chisos Mts., Tex.	June 7, 1901.	"	101	84	18.5	23.3	15.8
258666	♀	Ash Creek, 6100 ft., Graham Mts., Ariz.	May 16, 1914.	E. G. Holt.	99.5	79.5	16.8	22.3	16.
258444	♀	25 miles northeast of Rice, 5800 ft., Nantan Plateau, Arizona.	May 12, 1916. May 11, 1916.	W. P. Taylor. E. A. Goldman.	100. 98	84.5 81.5	16.2 17	21.5 22	14.8 16
241319	♀	"							
Average of five females									
					99.3	82.7	17.5	22.3	15.4

¹ Type.

MEASUREMENTS OF SPECIMENS OF *Piranga hepatica hepatica*.

U. S. Nat. Mus. No.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed Culmen.	Tarsus.	Middle toe with- out claw.
143640	♂	Near Totontepec, Oaxaca, Mexico.	July 22, 1894.	E. W. Nelson and E. A. Goldman.	97	77	18	22.5	16
189480	♂	Omilteme, Guerrero, Mexico.	May 25, 1903.	"	100.5	83	17.8	23.5	15
143638	♂	Reyes, Oaxaca, Mexico.	Oct. 19, 1894.	"	97	84	17.5	23	17
143650	♂	Tetela del Volcan, Morelos, Mexico.	Feb. 12, 1893.	"	97	78	18	22	16
143647	♂	Cuernavaca, Morelos, Mexico	Jan. 6, 1893.	"	100	81.5	17	22.5	16.2
Average of five males									
143639	♀ im.	La Parada, Oaxaca, Mexico.	Aug. 19, 1894.	E. W. Nelson and E. A. Goldman.	92	76.5	16.8	23.	15
143648	♀ im.	Querendaro, Michoa- can, Mexico.	Aug. 7, 1892	"	96	82	16.2	22.5	—
143651	♀	Cuernavaca, Morelos, Mexico.	Jan. 4, 1893.	"	98	83	17.8	21	16
Average of three females									
					95.3	80.5	16.9	22.2	15.5

NOTES ON NORTH AMERICAN BIRDS.

VII.

BY HARRY C. OBERHOLSER.

In continuation of previous papers¹ on North American birds, notes on six species are here offered. These belong to the following families: *Anatidæ*, *Aquilidæ*, *Laridæ*, *Corvidæ*, and *Mniotiltidæ*.

Nettion carolinense (Gmelin).

This well-known Teal has recently been treated as a subspecies of the common Teal of Europe (*Nettion crecca*).² Our American *Nettion carolinense* in many respects very much resembles the European Teal, and, so far as we are able to determine, is, in the female, practically indistinguishable. The male of *Nettion carolinense*, however, differs from the same sex of *Nettion crecca* in the possession of a distinct, usually broad, bar on the side of the breast, and by the entire lack of white on the scapulars, both inner and outer webs. The barring of the back and flanks is much finer and less conspicuous, but this, although diagnostic, is not so trenchant as the two other characters just mentioned. In all the large series of these two birds that we have examined we have not seen a male which showed any intergradation in the white bar on the side of the breast or in the white of the scapulars. While it is, of course, true that the great similarity of color pattern and of coloration, to say nothing of osteological resemblances, indicates clearly that both these birds descended from a common ancestor, and that at no very remote period were probably connected by either individual variation or geographic intermediates, and thus

¹ For the other papers in this series, cf. 'The Auk,' XXXIV, April, 1917, pp. 191-196; XXXIV, July, 1917, pp. 321-329; XXXIV, October, 1917, pp. 465-470; XXXV, January, 1918, pp. 62-65; XXXV, April, 1918, pp. 185-187; and XXXV, October, 1918, pp. 463-467.

² Committee British Ornithologists' Union, *List British Birds*, ed. 2, 1915, p. 171.

from a modern standpoint subspecies, they are now, in the male at least, separated by two absolutely constant characters, on account of which they should, of course, stand as distinct species.

***Circus cyaneus hudsonius* (Linnæus).**

Dr. Hartert, in a recent publication,¹ treated the American Marsh Hawk, *Circus hudsonius* (Linnæus), as a subspecies of the European Harrier, *Circus cyaneus* (Linnæus). An examination of a large series of both these birds has been made with the object of determining the desirability of this change, with the following result.

The male of the American bird, *Circus hudsonius*, differs from the same sex of *Circus cyaneus* in its less uniform, darker, and more distinctly barred tail; its usually darker, less bluish (more brownish) upper surface; darker, less clearly bluish gray color throughout; and more or less barred and spotted posterior lower parts. The female is also darker, but the differences in this sex are not so distinctive. All the characters that separate *Circus hudsonius* from *Circus cyaneus* are clearly but average, with the exception of the spots on the posterior under surface, which appear to be nearly, if not quite, always present to a greater or less extent in the former bird. There are, however, occasional specimens of *Circus hudsonius*, which in this respect so closely approach the unspotted condition of *Circus cyaneus*, and some of *Circus cyaneus* so much like *Circus hudsonius*, that a trinomial designation best serves to express the relationship now existing between the two birds. This is apparently one of those cases of a subspecies which is in about the last stages of complete specific segregation, and which in the course of time will be entirely distinct. At present, however, our Marsh Hawk should probably stand as *Circus cyaneus hudsonius* (Linnæus).

***Haliaeetus albicilla brooksi* Hume.**

Dr. Louis B. Bishop, a number of years ago, recorded the Gray Sea Eagle (*Haliaeetus albicilla*) from Unalaska, in the Aleutian Islands, Alaska.² Subsequently, Mr. A. H. Clark referred the

¹ *Vögel paläarkt. Fauna*, Heft IX (Band II, Heft 3), October, 1914, p. 1142.

² *North American Fauna*, No. 19, 1900, p. 73.

birds of this species from northeastern Asia and from Alaska to *Haliaeetus albicilla brooksi* Hume.¹ The present writer, in the course of other investigations, incidentally had occasion to verify the status of this Asiatic subspecies. The result serves to substantiate Mr. Clark's statement that the Gray Sea Eagles from eastern Asia, the Commander Islands, and northern India are all so much smaller than European birds that their subspecific separation is necessary. The earliest name available for this form seems to be *Haliaeetus brooksi* Hume,² described from "upper India." The Gray Sea Eagles occurring on the Aleutian Islands, or, in fact, anywhere else in Alaska, belong, of course, to this race, and their reference to *Haliaeetus albicilla brooksi* Hume confirms its addition to the North American list.

***Larus canus brachyrhynchus* Richardson.**

The American bird now called *Larus brachyrhynchus* is evidently very closely allied to the Old World *Larus canus* Linnæus. Study of a series of specimens of these two birds shows that about the only characters separating *Larus brachyrhynchus* from *Larus canus* are the average smaller size of the former, the usually greater amount of gray on the basal portion of the second and third primaries (counting from the outermost), and that this gray terminates distally in a small white or whitish spot. The difference in size and of the extent of the gray on the basal portion of these two primaries is at once seen to be merely of average character, so that the main distinction between the two supposed species is the white area on the third primary of *Larus brachyrhynchus*; and upon this rests the claim of *Larus brachyrhynchus* to specific distinctness from *Larus canus*. When sufficient material is examined, however, it becomes evident that even this character is not entirely constant, for individuals occur that quite bridge over the difference between the two forms. For example, a specimen in the Biological Survey collection, No. 193531, U. S. Nat. Mus., from Slave River, Mackenzie, collected on June 16, 1903, is, so far as its quill characters are concerned, almost perfectly typical *Larus canus*, yet it

¹ Proc. U. S. Nat. Mus., XXXVIII, April 30, 1910, p. 57.

² Ibis, series 2, VI, No. XXIII, July, 1870, p. 438.

is undoubtedly an individual variant of *Larus brachyrhynchus*. Likewise in some specimens of Old World *Larus canus* the whitish terminal area of the gray wedge on the third primary is indicated; and a specimen of *Larus canus* from Bering Island, No. 92894, U. S. Nat. Mus., has this gray wedge almost white at its distal end. These individual differences may to some degree account for some of the records of *Larus canus* in North America, though doubtless the latter does occasionally reach our coast. In view of the above facts it seems necessary to consider *Larus brachyrhynchus* a subspecies of *Larus canus*, and its name will therefore become *Larus canus brachyrhynchus* Richardson.

***Corvus brachyrhynchos caurinus* Baird.**

The Crow described by Prof. S. F. Baird as *Corvus caurinus*¹ has been commonly considered a distinct species, although recently reduced by Mr. Ridgway² to the rank of a subspecies. Study of a large series of the Northwestern Crow, in conjunction with *Corvus brachyrhynchos hesperis*, shows that there is apparently nothing in either size or color to warrant the status of *Corvus caurinus* Baird as a distinct species. There is absolutely no difference in color between this bird and *Corvus brachyrhynchos hesperis*. The very tangible differences which separate *Corvus ossifragus* Wilson from *Corvus brachyrhynchos*, in the glossiness of the upper and lower surfaces and the lack of squamate effect of the feathers on the back, are entirely absent in *Corvus caurinus*. In fact, the only visible character to distinguish the latter from *Corvus brachyrhynchos hesperis* is its smaller size, and even this is at most only average. There is consequently no legitimate excuse for considering *Corvus caurinus* anything but a subspecies of *Corvus brachyrhynchos*, despite its somewhat different voice. It should, therefore, hereafter be called *Corvus brachyrhynchos caurinus* Baird. This, it may be noted, is in entire accord with the results of the exhaustive study of this problem made by Mr. Samuel N. Rhoads,³ and also with the subsequent conclusions of Mr. H. S. Swarth.⁴

¹ Rep. Expl. & Surv. R. R. Pac., IX, 1858, p. 569 (Fort Steilacoom, Washington).

² Bull. U. S. Nat. Mus., No. 50, part III, 1904, p. 272.

³ The Auk, X, No. 1, January, 1893, pp. 18-21.

⁴ Univ. Calif. Publ. Zool., X, No. 1, February 13, 1912, p. 50.

***Dendroica erithachorides castaneiceps* Ridgway.**

The Golden Warbler commonly known as *Dendroica bryanti castaneiceps* is apparently confined to the Pacific coast of Mexico and Central America from Lower California to Costa Rica. Mr. Ridgway, in his most recent review of the group,¹ treated this bird as a subspecies of *Dendroica bryanti* Ridgway, from the Gulf coast of Mexico and the Caribbean coast of Central America; and in this opinion most subsequent writers have followed him. Examination of available material in various museums, including much recently collected, particularly from Panama and Costa Rica, the latter partly by Mr. Ridgway himself, shows now that *Dendroica bryanti* is a subspecies of *Dendroica erithachorides* Baird, from northern Colombia and Panama, which Mr. Ridgway regarded as a distinct species. The difference between these two birds consists chiefly in the less heavily streaked breast and sides, and the thus more abruptly defined exterior margin of the rufous of the throat in *Dendroica bryanti*, together with the somewhat smaller size of the latter. Intergradation takes place both in size and in the character of the streaks on the lower parts; and there are specimens which it is difficult to assign to one race or the other. Since, therefore, *Dendroica bryanti castaneiceps* Ridgway² is but subspecifically separable from *Dendroica bryanti* Ridgway,³ and as the latter, as above shown, is but a subspecies of *Dendroica erithachorides* Baird, it seems necessary to call the Mangrove Warbler of the Pacific coast of Mexico *Dendroica erithachorides castaneiceps* Ridgway.

¹ Bull. U. S. Nat. Mus., No. 50, part II, 1902, p. 530.

² Proc. U. S. Nat. Mus., VIII, Sept. 2, 1885, p. 350, footnote (La Paz, Lower California).

³ *Dendroica sielottii* var. *bryanti*, Ridgway, Amer. Nat., VII, October, 1873, p. 605 (Belize, British Honduras).

DESCRIPTION OF A NEW SEASIDE SPARROW FROM
FLORIDA.

BY ARTHUR H. HOWELL.

ONE of the surprising results of a short collecting trip made by the writer to Cape Sable, Florida, in February, 1918, was the discovery of a distinct new species of Seaside Sparrow. This may be described as follows:

***Thryospiza*¹ *mirabilis* sp. nov.**

Cape Sable Seaside Sparrow.

Type, No. 261,542, U. S. National Museum, Biological Survey Collection; ♂ adult, Cape Sable, Florida, February 18, 1918; collected by A. H. Howell; original number, 1599.

Specific characters.—Most like *Thryospiza maritima sennetti*, but smaller, the upper-parts brighter and more greenish, the edgings on the tertials and scapulars more whitish; under-parts much more extensively whitish and the streaks much darker and more sharply defined.

Description of type.—Pileum mouse gray, streaked (chiefly in two lateral stripes) with chætura black, washed on occiput with yellowish olive; hind neck pale yellowish olive, this color forming a rather conspicuous, broad, transverse band; interscapular region and rump olive (slightly paler than deep olive of Ridgway), streaked with fuscous, the scapulars broadly edged with white; upper tail coverts olive, with a broad median streak of fuscous and tipped with pale grayish; rectrices fuscous along vanes, mouse gray on inner webs, indistinctly barred with fuscous; outer webs citrine drab; tips margined with white. Supraloral region empire yellow; superciliary stripe pyrite yellow, bordered above with grayish and shading posteriorly to cream buff; lores, suborbital region, and auriculars neutral gray, mixed with whitish; postocular streak and short streaks on side of neck chætura black; submalar stripe buffy white, bordered above and below with chætura black. Primaries and secondaries fuscous, edged with olive; tertials dark fuscous, margined with buffy white; edge of wing empire yellow; lesser coverts pyrite yellow; middle coverts fuscous-black, edged with grayish olive; greater coverts fuscous, shaded with olive, and bordered on outer

¹ For the use of this name in place of *Passerherbulus* for the Seaside Sparrows see Oberholser, Auk, April, 1918, p. 210.

web with cinnamon, the terminal portion darker and margined with buffy white; under-parts white, heavily streaked on chest, sides, and flanks with dark fuscous, the same areas faintly washed with cinnamon; under tail coverts white, tinged with cinnamon and streaked with fuscous; thighs drab; lining of wings dull white, mottled with hair brown; upper mandible blackish, lower mandible dark mouse gray.

Measurements.—Type (adult male): wing, 57; tail, 51; exposed culmen, 12; depth of bill at base, 6.5; tarsus, 22; middle toe, 17. Average of five adult males: Wing, 58.2 (57–60); tail, 51.4 (50–53); exposed culmen, 12.1 (12–12.5); depth of bill at base, 6.6 (6.5–7); tarsus, 21.9 (21.5–22); middle toe, 16.8 (16–17). One adult female: 53; 47.5; 12.5; 7; 22; 16.

Remarks.—This species differs so strikingly from all the other Seaside Sparrows that intergradation with any of the forms seems very improbable. From its nearest geographical neighbor, *Thryospiza maritima peninsulæ*, occupying the west coast of Florida from Tarpon Springs northward, *mirabilis* differs more than from other races of that species. Its closest affinities are with *Thryospiza maritima sennetti*, which inhabits the coast of Texas; it differs from this and from all other races of *maritima* in its more extensively white under-parts, with more sharply defined streaking, and more greenish upper-parts. In size, and in the white under-parts with sharply defined streaks, it approaches *Thryospiza nigrescens* of the east coast of Florida, but differs widely from that species in the color of the upper-parts.

Individual variation is not extensive; in some specimens the streaks on the under-parts are mouse gray instead of fuscous; the tail feathers vary from mouse gray to hair brown, and in all specimens except the type the white tips are nearly or quite obsolete (probably worn off); the single female examined is washed beneath with olive-buff.

The limits of the range of this species are at present unknown, but probably it is confined to the coastal marshes in the vicinity of Cape Sable, where doubtless it is a permanent resident. It is known from six specimens taken there by the writer between February 13 and 18, 1918. The species appeared to be only moderately numerous in the area traversed.

DESCRIPTIONS OF NEW BIRDS FROM SOUTH AMERICA.

CHARLES B. CORY.

***Taraba major approximans* subsp. nov.**

Type from Serra Baturite, Ceara, Brazil. Adult male, No. 49017, Field Museum of Natural History. Collected by R. H. Becker, July 19, 1913.

Description.—Similar to *T. major major* from southern Brazil, Paraguay, etc., but with more white on the tail, bands on tail more complete and larger, and all the tail feathers with some white markings, the middle feathers with borders marked with small white spots; white edgings of the primaries and wing coverts broader and more conspicuous.

Measurements.—Wing, 91; tail, 102; bill, 25; tarsus, 33 mm.

Remarks.—Seventeen specimens examined. The females have the upper parts brighter and more rufous than in females of either *T. major major* or *T. major semifasciatus*. Specimens from Macaco Secco, near Andarahy, Bahia, appear to be intermediate.

***Erionotus cearensis* sp. nov.**

Type from Serra Baturite, Ceara, Brazil. Adult male, No. 47674, Field Museum of Natural History. Collected by R. H. Becker, July 15, 1913.

Description.—Similar to *Erionotus caeruleus* (Vieill.) from Paraguay (and agreeing with that species in having the tertials with grayish white edges, the whitish belly, and elongated marginal spot, 12 mm., on outer tail feather), but differs in having the white markings on the wing coverts decidedly broader; terminal third of under tail coverts pure white and bill heavier and slightly longer.

Measurements.—Wing, 71; tail, 69; culmen, 16 mm.

***Drymophila richmondi* nom. nov.**

Dr. Hellmayr (Abh. Ak. Wiss., Munchen, XXII, 1906, p. 663) proposed *Formicivora ochropyga* as a new name for *Formicivora striata* (nec *Thamnophilus striatus* Spix) Sclater, Cat. Bds. Brit. Mus., XV, 1890, p. 252, but Dr. C. W. Richmond has called my attention to the fact that *ochropyga* is also preoccupied by *Formicivora ochropyga* Pelzeln. I, therefore, take pleasure in proposing that it shall be called *Drymophila richmondi*.

***Furnarius agnatus endoecus* subsp. nov.**

Type from Encontrados, Zulia, northwestern Venezuela (in heavily forested region southwest of Lake Maracaibo). Adult female, No. 50546, Field Museum of Natural History. Collected by M. P. Anderson, November 27, 1913.

Description.— Similar to *F. agnatus agnatus*, but upper-parts, wings and tail darker (more chestnut rufous), and crown very much darker (not so brown as in *leucopus* from Guiana), but color approaching nearer to *leucopus* than it does to that of *agnatus agnatus* from Santa Marta; abdomen paler, more whitish.

Remarks.— *F. a. endoecus* differs from *F. a. venezuelensis* (from the arid coast region east of Lake Maracaibo) in much darker and more brownish crown, much darker more chestnut-rufous upper parts, wings and tail, and darker and more rufous breast.

***Cinclodes neglectus* sp. nov.**

Type from Mountains near Otuzco, (alt. about 11,000 ft.) western Peru. Male, No. 50559, Field Museum of Natural History. Collected by W. H. Osgood and M. P. Anderson, March 19, 1912.

Description.— Ground color of crown dark brown (near Dresden brown) approaching that of *C. fuscus*, but feathers of anterior crown and forehead with small tawny shaft spots; eyelids and superciliary stripe whitish; back dull reddish brown becoming strongly rufous brown on rump and upper tail coverts; tail rufous brown, the three outer tail feathers entirely bright rufous; throat dull whitish, the feathers bordered with dusky; breast feathers tawny white bordered with dusky; rest of under-parts grayish brown becoming slightly rufous brown on the flanks and under tail coverts; nearly all of the feathers of the breast, abdomen and sides with narrow, pale (whitish or tawny white) shaft streaks; exposed portion of quills rufous; under wing coverts tawny, more or less marked with dusky; band near base of inner quills rufous; legs and feet pale brown (in dried skin).

Measurements.— Wing, 84; tail, 70; bill (upper mandible broken) about 18; tarsus, 27 mm.

Remarks.— Although but one specimen was taken, this seems to be a well marked species distinguished by its rufous tail, strongly marked under-parts, pale legs and feet, etc.

THIRTY-SIXTH STATED MEETING OF THE
AMERICAN ORNITHOLOGISTS' UNION.

BY T. S. PALMER.

THE Thirty-sixth Stated Meeting of the American Ornithologists' Union convened in New York City, on Monday, November 11, 1918. Owing to the epidemic of influenza which had prevailed for some weeks it was necessary, for the first time in the history of the Union, to omit the public sessions and confine the sessions to business meetings of the Council, Fellows and Members. The meetings were held on the historic occasion of the signing of the armistice and amid the noisy celebration of the end of the great world war. The attendance included 14 Fellows and several members. Among those present were two Founders of the Union, Dr. J. A. Allen and Dr. A. K. Fisher, and three Fellows originally elected in 1883, William Dutcher, Dr. Geo. Bird Grinnell and John H. Sage.

At the meeting of the Fellows called to order in the American Museum of Natural History at 8.05 P. M. by the President, John H. Sage, 12 Fellows were present. The amendment to the By-Laws proposed at the last Stated Meeting, making the fee of Patrons one thousand dollars, was formally adopted.

At the meeting of the Fellows and Members called to order by the President at 8.20 P. M., 13 Fellows and 4 Members were present. Following the calling of the roll the list of members in military and naval service was read (see last pages). The report of the Secretary giving the status of the membership was then presented. This report showed a net gain of 62 members during the year. In November, 1917, the total number of members was 891 while the present membership was 953 distributed as follows: Fellows, 50; Retired Fellows, 2; Honorary Fellows, 15; Corresponding Fellows, 56; Members, 80; and Associates, 750. During the year the Union lost 14 members by death, 13 by resignation and 20 by delinquency. The deaths (including two in the previous

year, news of which was delayed) comprised those of one Retired Fellow, one Honorary Fellow, one Corresponding Fellow, and 11 Associates, three of whom were killed in action in France. The deceased members are as follows:

- Lyman Belding,¹ Retired Fellow, aged 88½, died at Stockton, Calif.,
Nov. 22, 1917
- Dr. Friedrich Hermann Otto Finsch,² Honorary Fellow, of Brunswick,
Germany, died in his 78th year, Jan. 31, 1917
- Col. William Vincent Legge,³ Corresponding Fellow, died in his 75th year
at St. Mary's, Tasmania, Mar. 25, 1918
- Eric Brooke Dunlop,⁴ of Winnipeg, Man., aged 30, killed in action.
May 19, 1917
- Miss Martha Burr Banks, of Westport, Conn., Dec. 13, 1917
- Rowland Gibson Hazard,⁵ aged 63, died at Santa Barbara, Calif.
Jan. 23, 1918
- George Batten,⁶ aged 64, died at Montclair, N. J. Feb. 16, 1918
- Prof. Jonathan Young Stanton,⁷ died in his 84th year at Lewiston, Me.,
Feb. 17, 1918
- Henry Justice,⁸ died in his 74th year at Philadelphia, Pa., Mar. 1, 1918
- Mrs. Sara Anderson Hubbard, died in her 86th year, at Brooklyn, N. Y.,
July 31, 1918
- Walter Freeman McMahon,⁹ of New York City, aged 29, killed in action,
Aug. 28, 1918
- Prof. David Ernest Lantz,¹⁰ died in his 64th year at Washington, D. C.,
Oct. 7, 1918
- Douglas Clifford Mabbott,¹¹ of Washington, D. C., aged 25, killed in action,
Sept. 15, 1918
- Mrs. S. W. Powell of West Beckett, Mass., died 1918

The Secretary reported that notices of the last annual meeting had been published in 'Bird-Lore,' 'Cassinia,' 'The Condor,' 'Guide to Nature,' and 'Science.' In an effort to secure greater publicity of the work of the Union brief notices had been sent to

¹ For obituary notice, see Auk, XXXV, p. 106.

² " " " see Auk, XXXV, p. 381.

³ " " " see Auk, XXXV, p. 510.

⁴ " " " see Auk, XXXV, p. 266.

⁵ " " " see Auk, XXXV, p. 264.

⁶ " " " see Auk, XXXV, p. 264.

⁷ " " " see Auk, XXXV, p. 511.

⁸ " " " see Auk, XXXV, p. 266.

⁹ " " " see Auk, XXXVI, No. 1.

¹⁰ " " " see Auk, XXXVI, No. 1.

¹¹ " " " see Auk, XXXVI, No. 1.

'The Emu,' 'Ibis,' and 'Nature,' and an account of the Union had been published in the 'American Museum Journal' for October, 1918.

In order to provide as far as possible for the dues of members in military service, requests for subscriptions to a memorial fund were sent to a selected list of members during the campaign for the Third Liberty Loan. This fund was to form part of the permanent funds of the Union and was to be invested in Liberty Bonds. The interest during the period of the war would be used to meet the dues of members in service and later for publications. The responses to this appeal were very generous and resulted in the acquisition of a fund of nearly \$1700. By vote of the Council those contributors who subscribed an amount equal to the life membership fee will hereafter be carried on the rolls as life members. By this action one Fellow, two Members and three Associates will be exempt in future from the payment of annual dues.

In April cards were sent to 100 libraries known to have 'The Auk' inquiring as to whether the sets were complete and whether the two general Indexes and the last Check List were available for reference. The correspondence which ensued resulted in the sale by the Treasurer of a number of volumes of 'The Auk' and also of 'Indexes' and 'Check Lists.'

Some progress was made during the year in an intensive study of the membership of the Union. A geographical list of the members arranged by states was prepared and small maps showing the geographical distribution of members in 1888 and 1918 were exhibited. A consolidated index containing the names of all persons who had ever been connected with the Union was also begun. In accordance with the vote taken at the last meeting lists of the members 'Called to the Colors' were published in each number of 'The Auk' and copies of these lists were forwarded to such of the members in service as could be reached. Copies of the report of the last meeting and of the discussion on 'Ornithological Work in 1918' were also distributed to the Corresponding Fellows.

The report of the treasurer showed the finances of the Union to be in a highly satisfactory condition with a substantial balance of \$2463.89 in receipts over current expenses and a total

surplus including subscriptions to the special memorial fund and income from life memberships and other invested funds, of more than \$6000.

The result of the election of officers for the ensuing year was as follows: President, John H. Sage; Vice Presidents, Witmer Stone and Geo. Bird Grinnell; Secretary, T. S. Palmer; Treasurer, Jonathan Dwight; Members of the Council, Ruthven Deane, William Dutcher, Joseph Grinnell, Frederic A. Lucas, Harry C. Oberholser, Charles W. Richmond, and Thomas S. Roberts.

On recommendation of the Council the following five Honorary and fourteen Corresponding Fellows were duly elected.

HONORARY FELLOWS:

Dr. Roberto Dabbene, Buenos Aires, Argentina.
Alwyn Karl Haagner, Pretoria, Transvaal.
Dr. Einar Lönnberg, Stockholm, Sweden.
Dr. Auguste Ménégaux, Paris, France.
Dr. Peter Suschkin, Kharkov, Russia.

CORRESPONDING FELLOWS:

Edwin Ashby, Wittauga, Blackwood, South Australia.
E. C. Stuart Baker, Secretary B. O. U., London, England.
Dr. Louis Brasil, Caen, France.
Dr. Walter E. Collinge, St. Andrews, Scotland.
Nils Gyldenstolpe, Stockholm, Sweden.
Tom Iredale, Ealing, England.
Rev. Francis Charles Robert Jourdain, Abingdon, England.
Cecil Boden Kloss, Kuala Lumpur, Federated Malay States.
Nagamichi Kuroda, Tokio, Japan.
Enrique Lynch Arribálzaga, Resistencia, Argentina.
Dr. Charles Theodore Ramsden, Guantanamo, Cuba.
Herbert C. Robinson, Kuala Lumpur, Federated Malay States.
Charles Francis Massy Swynnerton, Gungunyava, South Rhodesia.
Norman Frederic Ticehurst, St. Leonards-on-Sea, England.

Dr. Harold C. Bryant, Berkeley, Calif.; George K. Cherrie, Newfane, Vt.; Lieut. Ludlow Griscom, New York City; Lieut. James L. Peters, Harvard, Mass.; and Robert W. Williams, Washington, D. C., were elected to the class of Members, and the

following one hundred and forty-seven persons were elected Associates:

Miss Harriet Abbott, Box 125, Fryeburg, Maine.
 Joseph Moody Akerman, High St., Newburyport, Mass.
 Ransom Perry Allaman, R. D. 4, Bedford, Penn.
 Lucius Armitage, 282 E. 162d St., New York City.
 Ralph Arnold, 825 Union Oil Building, Los Angeles, Calif.
 Mrs. Benjamin Bachrach, 1437 West Main St., Decatur, Ill.
 John Leonard Bagg, 70 Fairfield Ave., Holyoke, Mass.
 Alfred M. Bailey, Louisiana State Museum, New Orleans, La.
 Miss Katharine Bruce Baird, 815 Webster St., N. W., Washington, D. C.
 Edward M. Ball, Falls Church, Va.
 Miss Helen Barker, Sandusky, O.
 Rev. John Mallery Bates, St. Paul, Nebr.
 Dr. James Baxter, Chatham, New Brunswick.
 Miss Clara Kern Bayliss, 6059 Harper Ave., Chicago, Ill.
 Mrs. Willard Bayliss, Eveleth, Minn.
 Ernest Harold Baynes, Meriden, N. H.
 Miss Frances Bigelow, Elkhart, Ind.
 Miss Marion Bole, Waterbury, Conn.
 Frederick Gilmer Bonfils, 1500 East 10th Ave., Denver, Colo.
 Miss Bertha Louise Brown, 53 Court St., Bangor, Me.
 Mrs. Herbert Brown, 434 E. 2d St., Tucson, Ariz.
 Rollin E. Buchanan, Excelsior, Minn.
 Frank Seiler Butterworth, Madison, Conn.
 Mrs. James C. Buzzell, 11 Henderson St., Bangor, Maine.
 Mrs. Hiram Byrd, Winter Park, Fla.
 Miss Ethel B. Capling, Wiseton, Sask.
 Mrs. Olivia Garnsey Carroll, Rutland, Mass.
 Clifford Mills Case, 16 Burton St., Hartford, Conn.
 Robert Carsen Caskey, Morristown, N. J.
 Mrs. Arthur E. Caswell, 241 Union St., Athol, Mass.
 Charles William Clagett, Upper Marlboro, Prince George Co., Md.
 C. Irvin Clay, Box 353, Eureka, Calif.
 P. Sidney Conger, Prairie du Sac, Wis.
 Blair Coursen, 64th & University Avenues, Chicago, Ill.
 Dr. Henry H. Covell, 1600 East Ave., Rochester, N. Y.
 Norman Criddle, Treesbank, Man.
 Albert Ashley Cross, Huntington, Hampshire Co., Mass.
 Miss Joann Olivia Crowell, Dennis, Mass.
 Prof. Byron Cummings, Univ. Arizona, Tucson, Ariz.
 Lee Raymond Dice, Biological Survey, Washington, D. C.
 Alexander Dawes DuBois, Dutton, Mont.

- Miss Lulu Dunbar, R. D. 1, Elkhorn, Wis.
Howard Eaton, Wolf, Wyo.
Miss Katharine May Edwards, Wellesley College, Wellesley, Mass.
Sidney E. Ekblaw, R. F. D. 23, Rantoul, Ill.
Willard Ayres Eliot, 1011 Thurman St., Portland, Ore.
Henry Lane Eno, Princeton, N. J.
George A. Eyer, Short Hills, N. J.
Mrs. William Falger, Modesto, Calif.
Francis Apthorp Foster, Edgartown, Mass.
Leonard Freeman Jr., 1374 Elizabeth St., Denver, Colo.
Miss Edna Gainsforth, Smithfield, Nebr.
Mrs. Frank Bemis Goode, Billings St., Sharon, Mass.
A. Lignori Gormley, Arnprior, Ont.
E. W. Graves, Spring Hill, Ala.
Walter G. Guth, 3929 Greenview Ave., Chicago, Ill.
Arthur Henry Hardisty, 2326 First St., N. W., Washington, D. C.
Harold Ira Hartshorn, 53 South 12th St., Newark, N. J.
Mrs. C. F. Harvey, Vernon Hall, Kinston, N. C.
G. S. Hauxhurst, The Cadillac, 17th and Walnut Ave., Cleveland, O.
Miss Hester Heacock, Sec. Wyncote Bird Club, Wyncote, Pa.
John Brooks Henderson, 16th St. & Florida Ave., N. W., Washington,
D. C.
Mrs. Elizabeth Adams Herrick, Topsfield, Mass.
Dr. C. Gordon Hewitt, Dept. Agriculture, Ottawa, Canada.
Andrew Whitman Higgins, Sandwich, Mass.
Mrs. G. B. Hoag, Elko, Nev.
Richard Montague Hunt, Mus. Vertebrate Zool., Berkeley, Calif.
Mrs. Gertrude H. Husher, 821 S. Hope St., Los Angeles, Calif.
Mrs. Silkman Elting Hyde, Mayfield, Idaho.
Ralph Waldo Jackson, R. D. 1, Cambridge, Md.
Dr. George Herman Jennings, Jewett City, Conn.
Wm. Frost Jones, Norway, Maine.
George L. Kaeding, Battle Mountain, Nev.
George L. Kirk, Rutland, Vt.
Albert J. Kirn, Solomon, Kans.
Roy M. Langdon, Sec. Maywood Bird Club, Maywood, Ill.
Prof. Austin P. Larrabee, Yankton College, Yankton, S. D.
George Augustus Lawyer, 1931 17th St., N. W., Washington, D. C.
Ernest G. Liebold, 94 Rhode Island Ave., Highland Park, Mich.
Clarence M. Lindsay, 213 Congress St., Brooklyn, N. Y.
Charles Irving Long, 130 Fifth Ave., Roselle, N. J.
Richard D. Lusk, Winkelman, Ariz.
Otto McCreary, Geneva, N. Y.
Myles Standish McGeever, 60 Keene St., Lowell, Mass.
Thomas Arthur McHarg, 725 Highland Ave., Boulder, Colo.
George Marvin Marekres, Sharon, Conn.

- H. H. Mitchell, Provincial Museum, Normal School, Regina, Sask.
Miss Carrie Ella Miller, 36 Cottage St., Lewiston, Me.
Dr. Loye Holmes Miller, State Normal School, Los Angeles, Calif.
Adelbert John Moody, Aetna Life Ins. Co., Hartford, Conn.
Dr. Wm. Ladd Moody, Newport, R. I.
William Henry Moore, Mouth Keswick, R. M. D. 1, N. B.
Charles B. Morss, 35 Greenleaf St., Bradford, Mass.
Edwin Lincoln Moseley, Bowling Green, O.
E. D. Nauman, Box 606, Sigourney, Ia.
Donald J. Nicholson, Orlando, Fla.
Mrs. Carrie Morse Norton, Faulkton, S. D.
Mrs. Edith Hollick Oliver, Authors' League of America, 34 W 42d St.,
New York, N. Y.
Henry W. Osgood, 16 Elm St., Pittsfield, N. H.
Mrs. Bertha Ellis Palmer, 1939 Biltmore St., N. W., Washington, D. C.
Miss Elizabeth Day Palmer, 1741 S. Harvard Blvd., Los Angeles, Calif.
Miss Jennie S. Parks, 128 Crafts Road, Chestnut Hill, Mass.
John Roy Pemberton, 71 Clarendon Ave., San Francisco, Calif.
Miss Elizabeth Alice Simpson Pennell, 252 Maine St., Brunswick, Me.
E. H. Perkins, Kingston, R. I.
Wright McEwen Pierce, Box 343, Claremont, Calif.
Mrs. F. A. Pritchard, 203 N. Court St., Medina, O.
Emmet Augustus Quarles, 40 Davenport Drive, Stamford, Conn.
Miss Mary Estelle Raker, 1484 E. Sherman St., Portland, Ore.
Walter S. Ratliff, Richmond, Ind.
Henry Cushier Raven, Bay Shore, L. I., N. Y.
Mrs. Bruce Reid, Port Arthur, Tex.
Henry J. Rust, Box 683, Coeur d'Alene, Idaho.
Miss Myra M. Sampson, 8 Paradise Road, Northampton, Mass.
Remi H. Santens, Carnegie Museum, Pittsburgh, Pa.
J. J. Schafer, Port Byron, Ill.
Julien Eliot Schonnegel, 92 Morningside Ave., 122d St., New York.
Will Scott, Bloomington, Ind.
James W. Sewell Jr., 2218 Patterson St., Nashville, Tenn.
Foster L. Shelley, Waukegan, Ill.
John A. Silver, Darlington, Md.
Miss Ethel M. Smith, 57 N. Pleasant St., Amherst, Mass.
Joseph Dewey Soper, R. D. 2, Preston, Ont.
Paul Haynes Steele, 1429 Cherokee St., Denver, Colo.
Mrs. Jesse Stephenson, Monte Vista, Colo.
Rev. Alfred Luther Struthers, Townsend, Mass.
Dana W. Sweet, Phillips, Me.
Loren E. Taylor, R. D. 2, Reno, Nev.
Miss Mabel Thurston Tilton, Vineyard Haven, Mass.
Miss Annie Florence Towne, Topsfield, Mass.
J. F. Truesdell, Equitable Bldg., Denver, Colo.

Mrs. George M. Turner, Riverside, Calif.
 Asam H. Twitchell, Flat, Alaska.
 Dr. Eugene U. Ufford, Central St., Auburndale, Mass.
 Miss Katie Vallandingham, 811 Highland Ave., Carrollton, Ky.
 Samuel Henry Vandergrift, 311 Riggs Building, Washington, D. C.
 Prof. Charles Taylor Vorhies, University of Arizona, Tucson, Ariz.
 Ernest Pillsbury Walker, Wrangell, Alaska.
 C. G. Watson, London, Ont.
 Rev. Le Roy Titus Weeks, Emmetsburg, Ia.
 Mrs. J. W. Wheeler, R. D. 1, Tucson, Ariz.
 Miss Lena Catharine Wiley, Buckland, Mass.
 Enrique R. Williams, Camoa, Province of Habana, Cuba.
 H. V. Williams, Grafton, N. D.
 Todd Albert Wingard, care Dr. C. W. Richmond, 1929 Park Road,
 Washington, D. C.
 Prof. Lyman Child Wooster, Ft. Hays Normal School, Hays, Kans.
 Rev. Charles John Young, Brighton, Ont.

The Committee on Biography and Bibliography, through its chairman, Dr. Palmer, submitted a brief verbal report showing progress in several of the projects mentioned in previous reports. Dr. Glover M. Allen, who has been appointed a member of the Committee, has been devoting his attention mainly to the preparation of an index of papers relating to types and special collections of birds and has already brought together about 200 titles. Work has been continued on the 'Index of Portraits of Ornithologists' and the entries have been increased from 700 to about 770, of which nearly 50 per cent are those of present or past members of the Union. In addition to new entries a number of new portraits of individuals already in the list have been indexed. Progress has also been made on the 'Bibliography of Bibliographies.' Much time has been devoted to the study already mentioned of the membership of the Union and to securing full names of the members to complete the records. In the matter of manuscripts it is interesting to mention that the valuable set of diaries of the late Prof. F. E. L. Beal, comprising more than 50 volumes and extending over a period of nearly 40 years, has recently been deposited in the library of the U. S. Department of Agriculture; and that an interesting manuscript of Titian R. Peale, relating to the history of the Wilkes Exploring Expedition, has been acquired by the Smithsonian Institution.

In accordance with the recommendation of the Council the invitation extended by the British Ornithologists' Union to the A. O. U. to join in a coöperative enterprise for the preparation of a series of Check Lists of the birds of the principal zoölogical regions of the world, arranged on a uniform plan, to be known as the 'Systema Avium' (see 'The Auk,' XXXV, p. 509), received favorable consideration and was referred to the committee on Classification and Nomenclaturè with power to act.

Resolutions were adopted expressing the thanks of the Union to the President and Trustees of the American Museum of Natural History for the courtesies extended during the 36th meeting of the Union, and also requesting the states of Oregon and California through their respective Legislative and Executive branches to take action to cede to the United States jurisdiction over such portions of the Malheur and Klamath Lake Bird Reservations as may be necessary to insure the permanent preservation of these refuges by the Federal Government.

On Tuesday afternoon, some of the officers of the Union under the guidance of Dr. Grinnell visited Audubon Park in the vicinity of 157th St. and Broadway and inspected the three houses where Audubon and his sons, Victor and John Woodhouse Audubon, lived during their later years. A visit was also paid to Trinity Cemetery, only a few blocks away, where Audubon and George N. Lawrence are buried.

On the following day the Treasurer and Secretary spent several hours in the library of the New York Historical Society (on 77th Street, opposite the southeast corner of the American Museum), examining the original drawings of Audubon's great work on the 'Birds of America.' This wonderful collection of drawings, preserved in five large portfolios, was purchased direct from Mrs. J. J. Audubon, nearly half a century ago. Apparently its existence is not generally known and it seems to have been seen by comparatively few ornithologists. An examination of it either superficially or with a reading glass will well repay any one who visits the library.

Although the omission of the public meetings with the opportunities for the presentation of papers and the usual social intercourse proved a great disappointment to many of the members,

it is gratifying to know that the Union has passed through the trying ordeals of war times without increasing its dues or cutting down its journal and without decrease either in its membership or income. In fact the past year has proved one of the most prosperous in its whole history.

The next meeting will be held in New York City, in 1919, at a date to be determined by the local committee.

GENERAL NOTES.

Further Notes on the "Fishy" Flavor of Birds.— Since publishing on this subject in the last issue of 'The Auk' (October 1918, pp. 474-6), the writer has been favored by correspondents with various valuable items. These are presented under appropriate headings selected from the conclusions of the former paper.

1. Certain individual birds of species not habitual fish eaters have their flesh tainted by a flavor which popularly is called "fishy." Mr. C. H. Young, of the Canadian Geological Survey, reports according to Mr. P. A. Taverner, that last spring at Shoal Lake, Manitoba, he shot two Golden Plover, which upon trial proved to be so "fishy" as to be almost uneatable. The two persons who ate them both became ill afterwards, while four or five others participating in other parts of the same meal were unaffected. Mr. Taverner states that a stew made from two Canada Geese killed on Red Deer River July 1917 was strongly fishy. Mr. Taverner again, "A batch of Semipalmated Sandpipers killed on the tidal mud flats on Miscou Island, in spring of 1914 were so fishy as to be edible only when other meat was lacking." Also "Juvenile Harlequin ducks raised on and never off from a small fishless lake in Jasper Park were so fishy as to be inedible." (This point is mentioned in (The Canadian Alpine Journal), Vol. IX, 1918, p. 63).

2. Habitual fish-eating birds do not necessarily taste fishy.

Loon. Average proportion of fish in diet 80%. Summer 1918. Tried an old bird, found it tough and not attractive in flavor but without trace of fishiness. (Taverner.)

Herring Gull.— Fish in diet, 54%. The fishermen of Nova Scotia eat a great many. (Dr. L. C. Jones.) An immature Herring Gull taken at Miscou Island in May was strongly fishy, but the inhabitants of the shores of the Gulf of St. Lawrence regard young summer and fall birds as great delicacies. (Taverner.)

Double-crested Cormorant.— Fish in diet, almost 100%. Dr. C. W. Townsend says: "The last time I was in Labrador I ate a Double-crested Cormorant, whose stomach was filled with fish, and found it delicious without a trace of fishy flavor. . . . The Cormorant almost melted in one's mouth, and although I could not induce the two sailors to touch it, the Captain, much to his surprise, found it good."

Hooded Merganser.— Fish in diet, 25%. Ned Hollister states that these birds are regularly shot and eaten at Delavan Lake, Wisconsin, being as well flavored as any of the ducks killed there. In his family they were preferred to Bluebills.

Bittern.— Fish in diet, 15%. Both adult and young are very delicate and tasty. Not as hearty as the larger Herons, almost equal to Partridge (Ruffed Grouse) but less dry. (Taverner.)

Great Blue Heron.—Fish in diet, 55%. J. Josselyn in his 'Two Voyages to New England' states that the finest game the colonists found was the Great Blue Heron. I have tried it and in flavor it is much like the Scoters, but the meat is much finer grained and very rich in fat. (Jones.) Adult is rather tough but of very fine flavor, a hearty meat more like beef than that of a bird. Juvenile, tender and more delicate. I regard this bird as the finest wild bird I have ever eaten under camp conditions. Tried it fried, broiled, and stewed. (Taverner.) Have found the young bird in the first autumn delicious eating. (Witmer Stone.)

Green Heron. Fish in diet, 40%. Very good, a little more delicate than the Night Heron. (Taverner.)

Black-crowned Night Heron.—Fish in diet, 40%. Very good, not quite as hearty as the Great Blue Heron. (Taverner.)

Mr. Taverner also reports that at Perce in 1914 and 1915 he tested Puffins, Murres and Razor-billed Auks, birds which make fish about 60% of their diet, and found all of them delicious.

In considering evidence on this subject it is necessary to distinguish clearly between a true fishy taste and the much more common merely strong or rank flavor. They are commonly confused. It has been suggested that fishy flavor may be due to a diet of mollusks rather than of fish, but in the writer's opinion this theory will no more bear searching analysis than the other. For instance Scoters and Eiders, almost exclusive mollusk feeders along the New England coast, are not fishy in flavor, and may easily be made into good dishes as the writer knows from experience. Robin Snipe collected on Wallops Island, Virginia, in spring and found to be feeding exclusively on small mussels, were not at all fishy, in fact were as good as any of the other shorebirds. In considering the effect of food upon flavor it is necessary also to recognize a certain specificity in flavor. For instance, in the corn belt hogs and cattle are kept under identical conditions and have with only minor exceptions the same foods; yet there is no chance of confusing the pork and beef they yield. Somewhat the same case is that of guinea fowl and chickens reared upon the same diet, but in flavor very easy to distinguish.

The writer does not wish to be understood to believe that food does not influence flavor. Remarks by correspondents indicate that they got an impression to this effect from the previous contribution, just what an effort was made to avoid. The Spruce Grouse and the Sage Hen, for instance, are two striking examples among American birds of food controlling flavor. The points chiefly emphasized are that fish-eating does not necessarily cause fishy flavor, and that the latter does exist in individual birds that in all probability have not acquired it by eating fish. In the light of the evidence the writer holds neither of these points is subject to dispute.—W. L. McATEE.

Egrets (*Herodias egretta*) in Northern New Jersey.—On August 4, 1918, two Egrets (*Herodias egretta*) were seen by the writer at a small

artificial lake near Branchville, New Jersey. These, together with the three that stayed several weeks during late summer and early autumn of 1916 in the vicinity of Van Cortlandt Park, New York City (Chubb, S. H., Auk, Oct., 1916, p. 433), one of which returned in the summer of 1917 to the same place (Rogers, Charles H., Bird-Lore, Sept.-Oct., 1917, p. 276), the one reported from Setauket, L. I., in the summer of 1916 (Nichols, Murphy, and Griscom, Auk, Oct., 1917, p. 440), and other recent records, would seem to indicate that the laws for the protection of this beautiful bird are bearing fruit.—G. CLYDE FISHER, *American Museum of Natural History, New York City.*

Brooding Habit of the American Coot.—Two nests of the American Coot (*Fulica americana*) were hatched in the North American waterfowl lake in the National Zoological Park during the summer of 1918, and one curious habit of the bird, which I do not recall having seen noted, attracted my attention. Until the young birds are about twenty days old, almost as large as small quails, and have lost the reddish markings on the head, they return to the nest each evening and are brooded by a parent bird, presumably the female. I had never supposed before that these birds returned to the nest once the young had left it, almost immediately after they were hatched. In one case the nest was placed on the dry ground, under the overhanging branches of a low tree, about two feet from the bank, and in an excellent position for observation from the shore. I repeatedly saw the Coots between sundown and dark, one parent on the nest, the young under her wings or nestling about her after the manner of the domestic fowl. The other parent at these times patrolled the nearby shore and savagely attacked any ducks that wandered into the immediate vicinity.—N. HOLLISTER, *Washington, D. C.*

Stilt Sandpiper (*Micropalama himantopus*) in Wyoming.—The occurrence of the Stilt Sandpiper (*Micropalama himantopus*) in Wyoming seems to be rare enough to render it advisable to place on record the existence of four specimens even if the records are decidedly old. In recently working over the series of this species contained in the collection of the United States National Museum, I found that four specimens, all males, were secured at Fort Laramie, Laramie County, Wyoming, May 15, 1875, by Dr. J. S. Newberry. Of these, Number 69918 was sent to Mr. E. E. T. Seton. The existence of these birds has evidently been unknown to Wyoming ornithologists as neither Knight (Birds of Wyoming, 1902, Bull. 55, Univ. of Wyoming, p. 47) nor Grave and Walker (Birds of Wyoming, 1913, Univ. of Wyoming, p. 35) make any reference to them.—B. H. SWALES, *U. S. National Museum, Washington, D. C.*

Notes on Migratory *Anatinae* and *Limicolae* from Western New York.—Realizing that most ornithologists are interested in obtaining

data regarding the effects of the present ban on spring shooting, the writer has decided to place on record a series of observations made during the past two seasons in the township of Hamburg. The species noted were all seen on the wet meadows which lie between the highway and Lake Erie, directly north of the village of Woodlawn. The area, according to the map, is about a quarter of a mile wide and half a mile deep, and is the property of the Lackawanna Steel Company, whose immense plant is situated only a short distance away to the north. Interurban cars pass to and fro at frequent intervals on the tracks along the highway, and the highway itself carries a heavy traffic. Moreover, a railroad track runs along the north and west sides of the region, and here a switch engine is almost continually at work.

Mr. James Savage of Buffalo, a well-known western New York observer, was the first to discover that the meadows were used as feeding grounds by migratory water fowl and shore birds. On Sunday, May 13, 1917, he was returning by automobile to his home in the city after an early morning excursion in the woods of East Hamburg with the writer. As he stopped his car on the turnpike to scan the flooded fields, he was very much surprised to note two beautiful Mallard drakes and a duck, and also sixteen pairs of Pintails. It was clearly evident that the latter species had already mated, for the birds were feeding or resting two and two. The individuals of both species had probably been on the meadows for some time, as no attention was paid to passing traffic or to the switch engine working on the lake side of them. Four Greater Yellow-legs, two Lesser Yellow-legs, and one Pectoral Sandpiper were also seen, besides some smaller species which could not be identified on account of the great distance, as Mr. Savage made all of the observations without getting out of his automobile.

The writer was unable to visit the locality until the following Saturday, May 19. There were only two pairs of Pintails left at that time; these were very tame and permitted him to approach within about thirty feet before they finally flew off toward Lake Erie. Although the Mallards and Yellow-legs were not found, two Pectoral Sandpipers, four Red-backed Sandpipers and four Semipalmated Plovers were noted near the highway. The occurrence of *Pelidna alpina sakhalina* at this season is somewhat noteworthy, as spring records for western New York are scarce. Two of the specimens were in full plumage and showed the characteristic red backs and black bellies; the slightly curved bills of all four were easily visible. The Red-backs were especially sluggish; they waded slowly around and leisurely probed for food, allowing one to approach within fifteen or twenty feet.

During the following spring four visits were paid to the area; these were begun in late April in order to list some of the earlier Anatinae. On April 21, 1918, there were feeding on the meadows one pair of Blue-winged Teals, one Pintail drake, and a single Coot. On April 22, however, the number

of birds had greatly increased. A pair of Baldpates and a female Shoveller had appeared; there were now two pairs of Blue-winged Teals, and no less than forty Pintails, the males and females occurring in about equal numbers; the Coot was also noted.

On April 25 the number of Baldpates had increased to eight, and one small flock of eight Green-winged Teals was flushed near the railroad track. The two pairs of Blue-winged Teals and the female Shoveller were again found; twenty pairs of Pintails were noted, and the number of Coots had increased to three. On Sunday, May 5, a final visit was paid to the area, and twenty pairs of Pintails were noted; the remaining birds had evidently passed on.

Inasmuch as the birds were easily observable from the highway, many persons in this vicinity have commented both upon their numbers and their tameness. The Pintail appeared to be the most unsuspicious species, and the Green-winged Teal the most wary; the Baldpate, Blue-winged Teal and Shoveller were somewhat more difficult to observe than the Pintail, probably because they were usually feeding among the grasses. In no case, however, was it necessary to guard against the danger of exposing one's self in order to make an identification; apparently none of the Anatinae paid any attention to the observer, providing, of course, he did not get too near them. Most of the ducks, and especially the Pintails, seemed somewhat stupid, as though their excess vitality had been entirely used up by a series of hard flights or an exceptionally severe winter. Instead of their being continually on the alert for danger, they fed or rested leisurely, apparently quite oblivious of their somewhat unfavorable environment.

Although numbers of foreign laborers live near the region, no attempts were made to molest the birds, probably on account of the Lackawanna policemen who regularly patrol the outskirts of the area. It might be added that the Coots recorded here are the first the writer has ever seen at this season in this vicinity; they are included because of this fact and also because they were on the meadows with the Anatinae.—THOMAS L. BOURNE, *Hamburg, N. Y.*

Spring Shore-birds in Connecticut.—An unusually heavy flight of shore-birds appeared in Connecticut in the spring of 1918. Not only were the common spring species in unusually large numbers, but a number of species usually rare at this season appeared. The main part of the flight as I observed it at Norwalk was between May 25 and June 1. The following species, rare or unusual at this season, were recorded.

Macrorhamphus griseus griseus. DOWITCHER.—Four of these birds were observed clearly on May 25. They were seen from a distance of about 150 feet, in a very clear light, and with seven diameter binoculars. On May 27 more birds believed to be this species were seen, but on account of fog nothing but their outlines was visible. On May 28 several more

were again certainly seen. This species has not been previously recorded from Connecticut in spring.

Tringa canutus. KNOT.—Two birds of this species were seen May 25 in company with the Dowitchers seen on that date. They were observed clearly and were in the beautiful rosy-breasted and gray-backed spring plumage. This species has been recorded but once previously in spring from Connecticut (Gabrielson, Auk XXXIV, 462-3) and then from nearly the same locality as this record.

Totanus flavipes. YELLOWLEGS.—Two birds of this species were observed at Norwalk, May 11. They were in company with the larger species, so that comparisons in size were easily made to identify them. There are but two previous spring records from Connecticut.

Squatarola squatarola. BLACK-BELLIED PLOVER.—This species was first noted on May 18, and was abundant from May 25 to June 1. During that time a good many in apparently full adult plumage were noted.

Arenaria interpres morinella. RUDDY TURNSTONE.—This species was very abundant from May 25 until June 1, flocks numbering from a dozen to fifty or more being seen. In fact, this species, usually rare in spring, was equally abundant with such common species as the Least Sandpiper and Semipalmated Plover.—ARETAS A. SAUNDERS, *Norwalk, Conn.*

Killdeer (*Oxyechus vociferus*) Nesting in West Haven, Conn.—For the past two seasons word has been sent to me that Snipe were nesting on a certain farm near West Haven, but I did not pay any attention to it, as I at once thought they were Spotted Sandpipers.

About the middle of June of the past season a farmer said to me that there was a Snipe's nest in one of his corn fields, and that it contained four eggs. I at once questioned him in regard to the size of the birds and, he said they were as big as Robins, and that they had black collars on their necks.

On July 7 I paid a visit to the farm and as I was passing a pasture lot I heard the call of a Killdeer and looking over the lot I saw a pair of the birds.

When I reached the house the man took me into a corn field back of the barn, and, there in the center of the field was the nest with three eggs, one having been broken accidentally while cultivating. The nest was simply a depression in the ground with a few small pebbles on which the eggs lay. The old bird made her appearance and moved about the field, dragging her wing and feigning lameness.

The eggs at this date were heavily incubated so I took two exposures of the nest and left it hoping they would return in 1919 as the farmer said they had nested on his place for three years. A few days later I had an interview with the son of a farmer who had previously told me about Snipe nesting on his place, and, he said that they had nested there this

season and in the season of 1917, while in the spring of 1916, sixteen Killdeer were on his place, but a pair of bird dogs from a nearby house were continually hunting them so that only two pairs remained to nest.

This is the first time I ever knew of Killdeer nesting in West Haven.—
NELSON E. WILMOT, *West Haven, Conn.*

Mourning Doves Sharing a Robin Roost.—On the evening of September 10, 1918, shortly after sunset in a country place outside of St. Louis, I saw fourteen Mourning Doves (*Zenaidura macroura carolinensis*) flying low through the gathering dusk. Others followed along the same course in small groups or singly, so that I was convinced that there was a general movement toward a roosting place. The next evening I posted myself near the point where the birds had been observed the night before, and discovered that several hundred Doves were going for the night to a piece of low ground only a few rods away. At the same time many Robins were also noted dropping into the same tangle in the manner characteristic of this species when flying to a "roost." For several evenings a count was made of both species as they came to the roost. On September 14, three observers at different points counted five hundred and twenty-five Robins and four hundred and ninety-seven Doves. On September 28 only fifty Doves were noted, and on October 10, none.

The thicket in which both species roosted covered several acres and was made up of wild plum, wild crab, small oaks and elms, many of which were draped with wild grape vines. Through a part of the thicket ran a piece of low ground in which grew taller elms, willows and buttonwood. The thicket was surrounded on all sides by open fields.

The Doves came chiefly to the northwest corner of the thicket, the Robins chiefly to the north and east sides, but a few individuals of each species came along the route used chiefly by the other. A possible explanation of the marked difference in routes lies in the fact that the region to the northwest, from which the Doves apparently came, contained large corn and wheat fields and had fewer trees, while that to the north and east, from which the Robins came, included more small yards and groves of trees.

The first Doves usually appeared later than the first Robins, and their whole flight was spread over a shorter period of time. Many individuals came singly, but loose flocks of as many as thirty-four were noted. They never flew as high as the Robins that came in early, but no lower than the Robins that came late, when it was getting dark. Like the Robins, they occasionally lit on telephone wires before going into the thicket. To the northwest, about a quarter of a mile away, were two small cattle ponds; here, one evening, I observed Doves stopping to drink, apparently on their way to the roost.

The Doves, unlike the Robins, were invariably silent on their way to the roost and after entering it. The Robins very often gave their sibilant note when flying over, and in the roost kept up a considerable interchange of

"pip" notes. For an evening or two a peculiar note, which might be described as a cross between a purring and a mewling note, coming from many points in the thicket, puzzled me until I discovered that it proceeded from Brown Thrashers. There must have been very many of these birds scattered in all parts of the thicket, but I never saw any fly in and conclude, therefore, that they remained in the thicket during the day.

In looking up the literature on the Mourning Dove, I find that very little has been published on the roosting habit above described. Neither Wilson, Coues nor Bendire mentions it. Audubon has the following statement, which is copied by Nuttall and Baird, Brewer and Ridgway:

"The roosting places which the Carolina Turtles prefer are among the long grasses found growing in abandoned fields, at the foot of dry stalks of maize, or on the edges of meadows, although they occasionally resort to the dead foliage of trees, as well as that of different species of evergreens. But in all these places they rise and fly at the approach of man, however dark the night may be, which proves that the power of sight which they possess is very great. They seldom place themselves very near each other when roosting on the ground, but sometimes the individuals of a flock appear diffused pretty equally over a whole field. In this particular they greatly differ from our Common Wild Pigeon, which settles in compact masses on the limbs of trees during the night. The Doves, however, like the Pigeons, are fond of returning to the same roosting grounds from considerable distances. A few individuals sometimes mix with the Wild Pigeons, as do the latter with the Doves."

S. N. Rhoads mentions "several dozen Doves" roosting with Robins, near Haddonfield, N. J. (Cassinia, 1913) but I have found only one writer who seems to have observed them roosting in the same manner and abundance that I have above described. In 'The Auk,' (Vol. 22, p. 150) Stockard in an article on the Nesting Habits of Mississippi Birds, writes as follows:

"This species is extremely common and in fall and winter they are seen collecting in large numbers. Late in summer they begin roosting in company and many hundred come about sunset to their chosen places for the night. During this season they are shot in large numbers while flying to the hedge or small wood that has been selected as a roosting place."

It seems from the dearth of published material on the roosting of the Mourning Dove, as if the habit could by no means be as universal as in the case of the Robin. It would be interesting, however, to hear from other observers, and particularly to get further data on the time of year during which Doves roost in common. Is it only after the young are fledged, or do the males roost while the young are being reared? Were the large numbers in the St. Louis roost due to the presence of migrants? Is the roosting habit continued further south by wintering birds? How often do Doves share a roost with Robins? When roosting in thickets, do the Doves spend the night on the trees, or on the ground in the manner described by Audubon?—RALPH HOFFMANN, *St. Louis, Mo.*

Duck Hawks Wintering in the Center of Philadelphia.—On January 29, 1918, two Duck Hawks (*Falco peregrinus anatum*) were observed circling about the tower of the Philadelphia city hall (517 feet in height) situated in the midst of the business center of the city. My office window on the sixteenth floor of the Widener Building about opposite to the tower clock (361 feet from the ground) gave me an excellent opportunity to observe them. How long they had been present before my attention was attracted to them I cannot say. They undoubtedly took up winter quarters on the tower on account of the large number of pigeons which live about the building and upon which they fed. The exceptionally cold winter also had its effect in reducing their normal food supply and forcing them in from wilder regions.

When first observed they were engaged in aerial evolutions apparently purely for the joy of flying, now rapidly, now slowly, now chasing one another and then a rapid swoop to one of the tower ledges, the leading bird alighting and the other wheeling about the tower or out into mid-air. These evolutions continued until dusk.

During these flights they seemed to pay no attention whatever to the many pigeons which darted here and there at terrific speed and in great confusion.

On three different occasions, however, hawks were observed eating a pigeon on the lower ledge at the base of the clock, apparently standing on it with both feet and tearing off the feathers which floated away on the air. This seemed to be a regular preliminary to the beginning of each meal. On one occasion a hawk flew across directly in front of the window from which my observations were made carrying a large pigeon in its talons. Its flight was perceptibly slow and labored as compared with its usual grace and agility. On February 5 a hawk flew to the northeast tower ledge with a pigeon which it proceeded to devour; hitherto the southeast ledge had always been the place to which the quarry was carried. During the early afternoon both hawks were noticed in flight about the tower when they suddenly dived downward at terrific speed almost to the rooftops and began a rapid darting flight among the chimneys, travelling northeast over the city apparently on a pigeon hunt.

Often they were seen to fly directly toward one another with a very rapid flapping of the wings but in a labored manner so that they made very slow progress, and then when almost breast to breast they would turn suddenly and dive down vertically. On February 6 I saw a hawk dive vertically from the clock ledge in pursuit of a pigeon which passed on the wing at least 300 feet below but failed to secure it. Usually these failures seemed to be due to the fact that two or more pigeons were pursued in an apparently haphazard manner instead of the more logical method of singling out one bird. When pursued en masse the pigeons invariably separated, scattering in all directions and leaving the pursuer in a rather confused and puzzled condition and in doubt as to which individual to attack, resulting in his return

to mid-air unsuccessful. The birds remained about the tower until the first week of March, when I suppose they departed for the north.—DELOS E. CULVER, *Addingham, Pa.*

A Note of the Long-eared Owl (*Asio wilsonianus*).—On the evening of August 3, 1918, near the village of Branchville in northern New Jersey, some friends appealed to me to identify a supposed bird-note which for several nights previous had been heard in a grove back of the hotel, "The Pines." The note had always been heard after dark, and with such regularity and frequency that the diurnal birds were eliminated. The descriptions of this voice of the night varied widely. One said it resembled the mew of a cat, another likened it to the noise of a squeaking pulley, while other comparisons were less suggestive. But after hearing it, I would describe the note as a softly whistled *wee-you*, the two syllables slurred together. Although scarcely as long as the ordinary note of the Phoebe, in quality it suggested that of the Screech Owl—being, however, much shorter and more frequently uttered than the latter. I now suspected that it was an owl, but felt sure that it could not be a Screech Owl, a Barred Owl, or a Great Horned Owl, for I am familiar with the notes of these. So, after securing an electric flash-lamp and while holding it over my head, I tried to get as close as I could to the bird, to see it if possible. At least I thought I might "shine its eyes" as several years ago I had done in Florida with the Chuck-Will's-Widow. The wood was composed partly of native white pines and hemlocks with an undergrowth of sprouts of American yew. I first located the bird in a tall hemlock, but I could not see it in the dense foliage. In searching for it with my bright light, I flushed it several times, but I could never hear it fly from one tree to another. Its silent flight strengthened my suspicion that it was an owl, and its habitat made me think it was a Long-eared Owl. Although I failed to see the bird that night, the next morning, August 4, I walked out into the grove, and under one of the hemlocks in which I had first heard the note the night before, I noted some droppings and also a few owl pellets. Upon looking up into the tree, I was surprised to see a Long-eared Owl with its ear-tufts elevated, gazing down at me. It was perched upon a branch not more than twenty feet up, and remained there until I had examined it to my entire satisfaction and then walked away and left it. While the evidence is circumstantial, it seems to me pretty sure that the unknown note came from this bird or one of the same species. By a little further search in the trees near by, a second bird was located.

Since I have never read a description which I am sure applies to this note of the Long-eared Owl, I thought it worth recording.—G. CLYDE FISHER, *American Museum of Natural History, New York City.*

The Short-eared Owl in Massachusetts in Summer.—As the present status of the Short-eared Owl (*Asio flammeus*) as a breeding bird

in Massachusetts seems to be somewhat doubtful, it may be worth while to record the fact that I saw one at Wauwinet on the island of Nantucket, August 6 and 7, 1918. The species formerly bred on Muskeget Island at the opposite end of Nantucket, where the killing of a family of six in order to protect the Tern colony from their depredations led to a discussion as to the probability that they belonged to an undescribed insular race (see Auk, 1897, 388; 1898, 75-77, 210-213). Mr. George H. Mackay writes me that he has been well satisfied that in the past the species "bred quite regularly (say one or two pairs) in the vicinity of Siasconset on Nantucket and more rarely on Muskeget Island." Siasconset is a little south of Wauwinet, on the eastern shore of the island.—FRANCIS H. ALLEN, *West Roxbury, Mass.*

On *Brotoyeris ferrugineifrons* Lawrence.—In 'The Ibis' for 1880 (page 238) Mr. George N. Lawrence described a new Parakeet from Bogotá, Colombia, under the name of *Brotoyeris ferrugineifrons*. This is evidently a very rare bird in collections. In fact, so far as I know, the type, which is now in the American Museum of Natural History (No. 44744), is the only known specimen.

This species is well marked and can be confused with no other. It does not, however, belong to the genus *Brotoyeris*, but to *Bolborhynchus*. This is shown by the form of the bill and by the presence of the oil-gland which bears a large tuft. In *Brotoyeris* the oil-gland is wholly absent.

Bolborhynchus ferrugineifrons is most nearly allied to *B. andicola*, with which it agrees in its uniform green plumage, the tail two-thirds as long as the wing, and the tenth primary shorter than the ninth. It differs from that species, as well as from *B. lineola*, in its decidedly greater size, darker green coloration, and in the rusty forehead and face.

The skin is not of native Bogotá make, and the name "Wallace" on Lawrence's label indicates that the specimen was obtained from the New York taxidermist, John Wallace. The measurements, in millimeters, of the type specimen are as follows: Wings, 116 and 118; tail, 77.5; culmen, 14; tarsus, 15. The tail is graduated for 24 mm.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

Arctic Three-toed Woodpecker (*Picoides arcticus*) at Belmont, Mass.—I am able to furnish one more record of this species rare in eastern Massachusetts. On October 17, 1918, in a ramble over the Belmont Hill pasture and wooded lands, I came upon an adult male bird working assiduously for grubs upon a dead pitch pine tree. The yellow crown was a conspicuous feature. He allowed as near an approach as fifty feet and permitted me an exhaustive survey of him. After a time he dropped to a prostrate trunk of pitch pine close by and was then but thirty-five feet from the rock on which I had seated myself, thus indicating an absence of shyness.

My only earlier record of an Arctic Three-toed Woodpecker in this state was of an adult male bird also, seen in Pine Banks Park, Malden-Melrose, on October 22, 1904,¹ and recorded there from time to time through the season up to April 21, 1905, thereby completing a six months' residence.

On my next trip over the Belmont lands on November 2 I did not find this Woodpecker.—HORACE W. WRIGHT, *Boston, Mass.*

The Song of the Blue Jay.—Possibly many who read the above title will think that they glimpse in it a lurking sarcasm, as they recall the notes which usually announce the presence of the "screaming jay," for comparatively few bird students or writers upon bird song seem to be aware of the Blue Jay's best musical performance.

Blue Jays are numerous in Florida and during my last two winters there I met a number of bird students in different localities who spoke to me of the Blue Jay song to which I refer, describing it as sweet, tender and quite lovely; delivered, they asserted, with a retiring modesty not perceptible in the Blue Jay's deportment on other occasions.

One friend, who is a keen observer of birds and their music, told me that when she spoke to him, some years ago, about this particular melody he said he had never heard any such song from the Blue Jay, but at a more recent period when meeting her again he referred to the song in question and said, "I have heard it since talking with you."

Though these reports occasionally came to me I did not hear the Blue Jay sing until last July in Winter Park, Florida. While a friend and I were seated near a window, dining, we heard a song unlike that of any of the common birds with which we were familiar; it was not loud nor ringing, nor at all like whistling, but the notes were formed into a sweet and somewhat complex bird melody. All paused to listen and it required from us only a lifting of the eyes to discover the singer, a Blue Jay, perching outside of the window on the lowest branch of a pine tree.

A search through books on birds and their notes yielded interesting quotations from the following authors:—in his 'Fieldbook of Wild Birds and their Music,' Mr. F. Schuyler Mathews says of the Blue Jay, "He attempts nothing that we can call a song." In the 'Color Key to North American Birds' by Dr. Frank M. Chapman and Chester A. Reed, turning to the description of the Blue Jay we read, "Notes: varied; commonly a loud harsh jay, jay; often whistling calls and imitations of the notes of other birds, particularly of common hawks." There is a similar estimate of the Blue Jay's musical powers in Chester A. Reed's "Bird Guide."

From Mabel Osgood Wright we have:—"A whistling bell-note in the breeding season; the usual cry a screaming jay, jay, jay." Nor do Bradford Torrey, Florence Merriam Bailey, Simeon Pease Cheney, and many others allude to a song from the Blue Jay.

¹ Auk, vol. XXII, Jan. 1905, p. 80.

However, in the 'History of North American Birds,' (Vol. II) by Baird, Brewer and Ridgway, we read: "The Blue Jay is conspicuous as a musician. He exhibits a variety in his notes and occasionally a beauty and a harmony in his song for which few give him credit." Although I am quite confident that Mr. John Burroughs does not mention this Blue Jay song in his earlier books, in 'The Ways of Nature' he quotes from Mr. Leander Keyser "the sweet gurgling roulade of the wild jays"; and Wilson alludes to the Blue Jay's occasional warbling with all the softness of tone of a bluebird. Mr. Nehrling also speaks of the Blue Jay melody in his 'Birds of Song and Beauty,' and Mrs. Olive Thorne Miller says in writing about a pet Blue Jay, "and occasionally uttering a sweet though not loud song." A bird student in central Georgia claims to have heard this Blue Jay music very often, quite early in the morning.

Do the Blue Jay's crude efforts at mimicry indicate a craving for more power in the realm of sound and melody, and is Nature evolving an original song for him through desire, or are we becoming aware that a bird singer has been modestly hiding his talent throughout the centuries behind a camouflage of swagger airs and teasing screams, or at best poorly executed mocking notes and a few whistles? — ISABEL GOODHUE, *Washington, D. C.*

The Aesthetic Sense in Birds as illustrated by the Crow.— The Crow (*Corvus brachyrhynchos brachyrhynchos*) is not generally recognized as a songster, but it has one note which has always seemed to me to serve for a love-song since it is heard chiefly in the spring and is delivered in a different fashion from the various caws in the bird's repertoire. This is the hoarse rattle which is familiar to all of us. It is uttered with the bill pointed vertically downward and opened rather wide. It is accompanied by no marked movement of the head and whole body as when the caws are delivered, but the note seems to issue of itself, as it were, being very suggestive of eructation. There is, however, an accompanying display of wings opened slightly at the bend and shoulder feathers ruffled such as is common in the courtship of birds. This love-song doubtless serves its purpose in the reproductive cycle, and it is conceivable that it may give pleasure to the singer's mate and to the singer himself, but on the other hand it would be hard to prove that it was anything more than a mere reflex, the mechanical performance of an automaton devoid of even the rudiments of æsthetic sense.

The Crow has another vocal accomplishment, however, of a radically different character and of a much higher order, one which, it seems to me, can be accounted for only by postulating a well-developed æsthetic sense. There is no melody in his vocal utterances and, of course, no harmony, but in time rhythm, he is a master. The only other bird that occurs to me as conspicuous for rhythm with or without melody is the Barred Owl, and his four-footed line of blank verse with the curious caesural pause in the middle is so unvarying that it may well be purely mechanical, whereas the Crow's is remarkable for its variety.

Every one has noticed how commonly the Crow caws in triplets — *caw, caw, caw*. Several years ago I found that a Crow near my house had a habit of giving four short caws in groups of two — *caw-caw, caw-caw* — and before long I discovered that other Crows in various localities many miles apart cawed in the same way. I came to call this, after the fashion of the fire-alarm, the 22 call. My attention being directed to this habit, I learned that this was by no means the only number in the Crows' fire-alarm system. My notes for August 19, 1915, read as follows: "Heard a Crow near the house this morning that cawed the number 21 (*caw caw (rest) caw*) a large number of times in succession — perhaps twenty or twenty-five times. The caws were short. This was followed by five short caws delivered two or three times, then two or three groups of three long caws, two or three groups of four long caws, and the 22 call delivered a few times. (I am not sure that I remember these various calls in the exact order.)" And for October 22, 1916: "A Crow near our house this morning gave over and over again many times a group of caws like the number 211 on the fire-alarm, occupying two or three seconds. The time was so regular that I could detect no variation. The length of the several notes was uniform, I think, and so were the pitch and the quality, the rhythm being all that differentiated the phrase from other performances of the Crow." And for March 14, 1917: "A Crow this morning cawed 211 several times very rapidly; i. e., each phrase was rapidly delivered."

Now, intelligent as the Crow is reputed to be, I do not believe that he has invented a Morse code of signals to convey information to his companions. Nor, on the other hand, does it seem reasonable to suppose that these performances are purely mechanical and involuntary. How can we escape the belief that the bird takes a delight, not only in the exercise of his vocal organs but also in the rhythm and the variety of his utterances? Is he not, in a limited way, a true artist, a composer as well as a performer? I ask it in all seriousness.

I have long believed with Mr. Henry Oldys that birds take an æsthetic pleasure in their own songs, and the case of the Crow seems to support this view so strongly that I have ventured to call attention to it. In support of the mechanistic view of bird-song the case of birds with cracked voices and similar imperfections has been cited. It is pointed out that such birds sing as vociferously as the good singers of their respective species, and it is argued that if they possessed any æsthetic sense shame would keep them silent. This argument would carry more weight with me if I had not heard so many shameless human singers, whistlers, and cornetists whose performances gave pleasure only to themselves and positive pain to most of their hearers! — FRANCIS H. ALLEN, *West Roxbury, Mass.*

Magpie (*Pica pica hudsonia*) in Northeastern Illinois.—The only actual capture of a Black-billed Magpie in Illinois that has come to my

notice, is an adult male in perfect plumage, which has recently been mounted by R. A. Turtle, the Chicago taxidermist.

This specimen was taken November 10, 1918, by Mr. J. Cropley, who saw two strange birds in a ravine at Lake Forest, one of which seemed to be crippled. He caught it and kept it alive for two or three days, when it died. About half the upper mandible was missing, evidently from an old wound; its stomach was empty.

Its mate flew off and was not seen again.—HENRY K. COALE, *Highland Park, Illinois.*

Proper Name of the Tree Sparrow.—The correct name of the Tree Sparrow must still be determined. We are not specialists in the American avifauna but herewith adduce facts that *Spizella monticola* (Gmelin) cannot be maintained. In 'The Austral Avian Record' (Vol. iii, No. 2, p. 41, Nov. 19, 1915) we wrote as follows: "*Fringilla canadensis* (Boddaert). This name, given on p. 13 to pl. 223 f. 2 was not admitted in the 'Catalogue of Birds,' and does not seem to have since been recognized. Consequently the name used for the bird there figured, viz., *Spizella monticola* Gmelin, still persists in the Amer. Ornith. Union Check-List 3rd edition p. 263, 1910: As Gmelin's name (Syst. Nat., p. 912, 1789) is absolutely equivalent and later than Boddaert's, the bird must be known as *Spizella canadensis* Boddaert."

Oberholser (Proc. Biol. Soc. Wash., Vol. 31, p. 98, June 29, 1918) rejects Boddaert's name, concluding that without doubt the figures and description apply to *Zonotrichia leucophrys* but stating that Gmelin's name is still correct for the Tree Sparrow.

Gmelin cites 1st *Passer canadensis* Briss; 2 Soulciet Buff; 3 Moineau de Canada Buff; 4 Mountain Finch Lath.; 5 Tree Finch, Arct. Zool. The first three references are the basis of Boddaert's name and must also be accepted as the foundation of Gmelin's species so that when it is concluded that Boddaert's name is inapplicable, so also must Gmelin's be. There does not seem to be any word in Gmelin's description controverting the above references, and Oberholser's continued acceptance of Gmelin's name is inexplicable. We do not question for a moment the accuracy of his determination of Boddaert's species, but the conclusion is that the figures have never before been critically examined.—G. M. MATHEWS AND TOM IREDALE, *England.*

The Rose-breasted Grosbeak in Connecticut in November.—On November 4, 1918, I observed a Rose-breasted Grosbeak (*Zamelodia ludoviciana*) at Norwalk, Conn. The bird was in the plumage of an adult female, and was so tame that it was observed clearly from a distance of less than ten feet. However it was at a time when I was not equipped for collecting, and in a place where collecting would have been impossible. There are two other November records of this species from Connecticut.—ARETAS A. SAUNDERS, *Norwalk, Conn.*

Zamelodia versus Hedymeles.—The generic name *Zamelodia* Coues has been, during recent years, in general use for our North American Rose-breasted and Black-headed Grosbeaks. This generic term was originally proposed by Dr. Elliott Coues (Bull. Nuttall Ornith. Club, V, No. 2, April, 1880, p. 98) for *Loxia ludoviciana* Linnæus and *Guiraca melanocephala* Swainson, because *Hedymeles* Cabanis (Mus. Hein., I, June, 1851, p. 152; type by subsequent designation [Gray, Cat. Gen. and Subgen. Birds Brit. Mus., 1855, p. 71], *Loxia ludoviciana* Linnæus) was supposedly invalidated by *Hedymela* Sundevall (Öfvers. Kongl. Vetensk.-Akad. Förhandl. Stockholm, 1846 (1847, p. 225) for a genus of *Muscicapidae*. Although *Habia* Reichenbach nec Blyth was for a considerable period used by American ornithologists for this group, *Zamelodia* was restored by Dr. Coues (The Auk, XIV, No. 1, January, 1897, pp. 39–42) when *Habia* was found to be preoccupied. The generic name *Hedymeles* Cabanis is not, however, according to either the International Code or to Canon XXX of the revised American Ornithologists' Union Code of Nomenclature, to be rejected on account of *Hedymela*, since it is a word with a different classical termination other than grammatical gender. In fact, it is a case exactly parallel to that of *Hydrobata* and *Hydrobates* (cf. Hartert, Hand-List British Birds, 1912, p. 149). It should, therefore, displace *Zamelodia*, and the two species of the group stand as

Hedymeles ludoviciana (Linnæus).

Hedymeles melanocephalus (Swainson).

HARRY C. OBERHOLSER, Washington, D. C.

Rough-winged Swallow, Unusual Nesting Sites.—A number of years ago a concrete retaining wall was built along the bank of Grand River, midway between the top and bottom, to protect the street above from the annual spring slipping. Three-inch iron drainage pipes were placed at intervals of a few feet and these pipes projected some two or three feet out of the face of the wall. The Rough-winged Swallows used these pipes yearly as nesting sites, continuing the practice until the wall itself slipped into the river below.

At least half a dozen pipes were occupied each year by the birds, although a few hundred feet up the river was a long extent of high shale bank with many cracks and fissures, the natural site of the species, and which is used at the present time as a nesting community for a number of pairs. This is the only instance I have seen, nor have I yet found in print any record of the Rough-wing departing from its usual nesting custom.—E. A. DOOLITTLE, Painesville, Ohio.

Late Nesting of the Red-eyed Vireo in Detroit, Mich.—While hunting birds, with field glasses, on Belle Isle on the morning of September 25, I was startled by the appearance of a Red-eyed Vireo followed closely by a young bird. The youngster flipped its wings and begged persistently

for food and the parent bird after finding a hairy worm would slap it about until it was shorn of its spines when it would thrust it down the yawning maw of the young beggar apparently without appeasing its hunger in the least as it would immediately demand more. The two were wandering about in short second growth saplings and I had ample opportunity to watch them without the aid of my glasses for some little time as they were within easy vision. There was no possible question of their identity. Has any one a later date for the nesting of this well-known bird?—ETTA S. WILSON *Detroit, Mich.*

Local Decrease of Warblers in 1917.— In the spring of 1917 very wet weather with cold spells prevailed through the western peninsula of Ontario and a good deal of the country to the north of it, the result being that many of the small birds failed to raise the usual number of young, and when the time for the autumn migrations arrived the birds usually seen in large numbers did not appear, or were in such small numbers as to be negligible.

Opposite my house in the city of London lies a small park of about three acres planted with the usual variety of shade trees, and in that park it is a usual thing to see in the autumn migrations quite large numbers of warblers and the species that usually associate with them, but in the autumn of 1917, the total number of warblers seen by all the observers who frequent the park, was not half a dozen, while in previous years it was a frequent thing to find half a dozen species in the course of a fifteen minutes' hunt.

So far as I could learn conditions throughout the western peninsula of Ontario were nearly uniform. At Point Pelee warblers were in extremely small numbers and every observer with whom I spoke or corresponded remarked on the great scarcity of these birds in that season. Fortunately, this state of affairs does not seem to have been universal and from many parts of the continent come different reports. The present breeding of 1918 was not altogether favorable and the number of migrating birds up to the time of writing (September 13), is small though there are more than were noted the previous year.—W. E. SAUNDERS, *London, Ont.*

The Name "erythrogaster," and Others.— A nomenclatural, or rather etymological, question has recently been raised which illustrates how great a tempest in a teapot may be stirred up over a point already settled by existing rules of nomenclature, and a brief statement of the case seems desirable.

In a paper on "The Birds of the Anamba Islands" (U. S. Nat. Mus. Bull. 98, p. 31, 1917) Dr. H. C. Oberholser designates the American Barn Swallow as *Hirundo rustica erythrogastris*, explaining in a foot-note that "the subspecific term *erythrogastris* as here used is a Latin adjective of the third declension and therefore has for its proper feminine nominative *erythrogastris*, not *erythrogastra* as commonly written."

In 'The Condor,' 1918, p. 92, Dr. Joseph Grinnell takes up the matter and among other things says: "In the spelling of the subspecific name of the American form however, I believe Oberholser to be wrong and *erythrogaster* should be the proper spelling, not *erythrogastris*. The term *erythrogaster* cannot be considered an adjective. It is a Greek noun retaining its own gender and case when Latinized."

Dr. W. Stone (Auk, 1918, p. 491) contributes further discussion and says:—"He [i. e. Grinnell] seems to be absolutely right and the action of the original A. O. U. Committee should be upheld."

The only wonder is that Dr. Oberholser should have disregarded the adopted rules of nomenclature and declared the word to be an adjective. Canon VIII of the A. O. U. Code long ago defined the sort of words that may be used as specific or subspecific names and more recently the International Rules of Zoölogical Nomenclature, Article 14, defined them still more explicitly as; (a) adjectives which must agree grammatically with the generic name, (b) substantives in the nominative in apposition with the generic name, and (c) substantives in the genitive.

Section (b) is applicable to this case for not only Boddaert, who in 1783 used *Hirundo erythrogaster*, but many other early writers on zoölogy evidently considered the word *erythrogaster* as a noun Latinized from the Greek after compounding the adjective *ερυθρός* (erythros, red) with the noun *γαστήρ* (gaster, the belly). Therefore its ending should remain unchanged no matter whether the genus be masculine, feminine or neuter, and as long as we have nomenclatural rules designed for the purpose of settling such questions, nothing whatever is gained by breaking away from them, and consequently the endings *-tra* and *-tris* are quite superfluous attempts to convert a noun into an adjective.

Unless existing rules are cancelled or considerably modified we are at the mercy of all etymological atrocities and must accept the burden of inconsistencies that confront us at every turn. If an author has obviously constructed a noun we may not turn it into an adjective, however convenient such procedure might be; and more than this I believe that Latin grammar and the law of priority must necessarily prevail in cases of doubt.

The converse of this is true and we may not turn an obvious adjective into a noun as Dr. Grinnell would do in the case of *Guiraca caerulea salicaria* (Condor, 1918, p. 92). By no wish of the describer can the good Latin, adjectival suffix *-arius*, convert *salicarius* (*salix*, *salicis*, the willow + *-arius* belonging to) into a noun!

The termination *-venter* should, by analogy, be the ending for all compounds of this Latin noun and the endeavors to convert such nouns into non-classical or rather nomenclatural adjectives are responsible for the various endings with which we are troubled. There is now no way of securing uniformity except by a ruling of the International Zoölogical Commission.

A great deal more might be said regarding many other nouns and ad-

jectives that have been sadly distorted through ignorant or careless handling, but for the present let it suffice to call attention to the above cases which are clearly defined and capable of definite settlement.— JONATHAN DWIGHT, *New York City*.

Waterton on Bird Song.— When the October 'Auk' reached me it so happened that I was reading Waterton's 'Essays' (1838-1855). There I found in his essay on "The Wren, The Hedge Sparrow and The Robin" a passage which is peculiarly interesting in connection with Mr. Hawkins' paper on bird song. It is this: "When we are informed that incubation is the main inducement to melody in the feathered tribe, we have only to step out after sunrise into the surrounding evergreens, and there we are sure to hear either the wren, the hedge sparrow, or the robin, in fine song, although not a single twig has been laid, or a piece of moss produced in furtherance of a nest, wherein to raise their future young. Certainly, in this case, neither love nor warmth could have had any hand in tuning the winter lyre of these little sons of Orpheus."— CORNELIUS WEYGANDT, *German-town, Philadelphia*.

Correction.— A regrettable error occurs in the first line of Mr. Arthur T. Wayne's article in the October 'Auk.' While his manuscript read: "Since my 'Birds of South Carolina,' " etc., it appeared in print "Since 'My Birds of South Carolina,' " etc. For this unfortunate misquotation of the title of his well known book Mr. Wayne is of course in no way responsible.— EDITOR.

RECENT LITERATURE.

Beebe's Monograph of the Pheasants.¹—Birds, from their gorgeous plumage, pleasing song and varied habits, possess an interest quite apart from the purely technical consideration of their structure and systematic relationship, subjects which in the lower orders of the animal kingdom cover practically the whole range of possibility in their study; and ornithology, fortunate in having such beings as its especial province, possesses in consequence a far broader literature than many of the other branches of zoölogical science can boast.

From the earliest days bird study has attracted, in addition to the technical ornithologist, men gifted with both literary and artistic talents, with the result that we are able to point with pride to a long series of splendid works of art and narratives of surpassing interest as a part of the literature of our favorite science. To those who have handled the great monographs of Gould, Elliot, Sharpe and others or the earlier classics of Catesby, Wilson and Audubon, there is the inevitable feeling that this phase of ornithological activity should not be allowed to perish, and hence we hail with especial delight any present-day contribution to this field.

Probably no other work of this sort has been looked forward to with greater anticipation than Capt. William Beebe's 'Monograph of the Pheasants,' the first volume of which is now before us, and to say that it fully meets our most sanguine expectations is but inadequate praise. A sumptuous royal quarto, 12 x 16 in., beautifully printed on special rag paper, with splendid colored plates by six of the leading bird artists of the world—reproduced with wonderful beauty and accuracy, photogravures of the haunts of the various species and a text of exceptionally high quality—all go to form a work of art and a literary production well worthy of the twentieth century. Beside the illustrations already referred to we must mention the colored plates which show the successive plumages, of one species in nearly every genus, from the natal down to the adult, and others depicting the eggs.

Much as we are indebted to Capt. Beebe and his corps of artists, through whose ability and talents this splendid work has been produced, back of it all our thanks are due to the generosity of Col. Anthony R. Kuser, of

¹ A Monograph of the | Pheasants | By | William Beebe | Curator of Birds of the New York Zoölogical Park; Fellow of the New York Zoölogical | Society and Director of the Tropical Research Station in British Guiana; Fellow | of the American Ornithologists' Union and of the New York Academy | of Sciences; Member of the British Ornithologists' Union; | Corresponding Member of the Zoölogical | Society of London, etc. | In four Volumes | Volume I Published under the auspices of the | New York Zoölogical Society by | Witherby & Co. 326 High Holborn, London, England | 1918 | Royal Quarto (12 x 16 in.) pp. i-xlix—1-198, 19 colored plates, 16 photogravures and 5 maps. Edition limited to 600 copies; price of each volume \$62.50.

Bernardsville, N. J., one of the Board of Managers of the New York Zoölogical Society, who suggested the undertaking and who has liberally supported both the necessary explorations and the subsequent publication, and his hope, as set forth in the preface by Dr. Henry Fairfield Osborn, of producing "a work which, from the standpoint of truth, of beauty and of thoroughness, should be worthy of the important place which the pheasants occupy in the science of ornithology," has been abundantly realized.

Many of the members of the American Ornithologists' Union remember hearing Capt. Beebe discuss his proposed Asiatic journey for the study of pheasants, at the meeting in New York, in the autumn of 1909, and two years later, at the Philadelphia meeting, they enjoyed his splendid photographs of the various countries through which he had travelled in the meantime — Ceylon, India, Burma, China, Japan, the Malay States, Borneo and Java — visiting the haunts of one or more species of each of the nineteen recognized genera of Pheasants. Now it is our privilege to share the knowledge that he has gained of these wonderful birds and to read and discuss the conclusions to which his studies of the group have led.

The present volume, the first of four, comprises the Blood Partridges (*Ithaginis*) of which six species and two additional subspecies are recognized; the Tragopans (*Tragopan*) with five species and one subspecies; the Impeyan Pheasants (*Lophophorus*) and the Eared Pheasants (*Crossoptilon*) each with three species. All of the species are figured in colors with the exception of two of the Blood Partridges which are very close to other figured forms. Under each genus there is a generic diagnosis with synonymy and a key to the species and subspecies, as well as a map showing their distribution. Under the species there is, whenever possible, an account of the bird from the author's personal experience with it in the field, written in Capt. Beebe's well known attractive style. This is followed by sections headed 'General Distribution'; 'General Account' (of habits, etc.); 'Early History'; 'Captivity' and 'Detailed Description.' Under one or other of these headings the author has collected all the available published information on the species, together with a vast amount of original matter derived not only from his explorations in the native haunts of the birds, but from his long experience with many of them in captivity and his studies of the material preserved in all the important museums of the world. The beautiful photogravures of the haunts of the various species, from photographs by the author, are so arranged as to exhibit on one plate a general view of the habitat, together with a near view showing the details of the environment. There is also an admirable device of printing on the thin interleaf of each plate a couple of terse paragraphs explaining just what it represents, calling attention to some peculiar pose or action of the bird, or some important feature of the landscape, which adds greatly to the value of the illustration and to the reader's appreciation of it. We do not mean to intimate that the plates do not

"speak for themselves," for they do to a remarkable degree; but there are in all pictures features quite apart from the artistic quality, which we do not appreciate until our attention is called to them, and some previous knowledge of the subject always adds to our interest.

At the end of each general account is a list of references, technical names of animals and plants mentioned in the text, etc., correlated by page and line, and printed all together in this way to avoid the use of footnotes. This plan while it no doubt adds to the beauty of the text is rather inconvenient for ready reference. Of the colored plates in the present volume, eight are by G. E. Lodge; six by Archibald Thorborn; four by H. Gronvold and one by Charles R. Knight. The two other artists who will contribute to the later volumes are Louis Agassiz Fuertes and H. Jones. The original of Mr. Knight's plate was an oil while all the others were water-colors; and the reproductions are by several different processes, some printed upon smooth paper others on "egg-shell" — thus giving us the benefit of a variety of methods, some better suited to one painting, some to another, but all of such excellence that there is little choice except such as individual preference may dictate.

The vexatious question of how to treat subspecies in a work of this sort has evidently caused the author no little trouble, as it has all who have had to deal with it, and the method adopted will we fear prove a little confusing to those not conversant with the difficulties involved. The specific aggregate called the "Himalayan Blood Partridge" and the two races (or subspecies) into which it is divided — the "Nepal Himalayan Blood Partridge" and the "Sikhim Himalayan Blood Partridge" — are all considered under separate headings printed in exactly the same-sized type; the first contains the general information common to the two races while the last two contain only special information relative to the particular race under consideration. In spite of text explanations, however, we fear that the uninitiated reader will think that three different kinds of birds are being treated of instead of two. While well aware that this is the method adopted in the A. O. U. 'Check-List,' the reviewer has reached the opinion that it is far clearer, either to consider the two subspecies only without reference to the specific aggregate, putting the general account of habits, etc., under the first; or to consider only the species, so far as headings go, and mention inconspicuously at the end of the account, the geographic races (subspecies) into which it may be divided. This is a problem of such general interest today that it cannot be passed without comment. We notice also some good-natured sarcasm here and there directed against nomenclature as such. "What's in a name?" says Capt. Beebe; "let us pass from discussion of the artificial handle applied by man during the last few years of the Tragopan's existence to the real vital study of the birds themselves." Nevertheless he has occasion to make use of quite a number of these artificial handles and to choose between the several that have in many cases been given to the same species or genus. While it is gratifying to find him saying of one

name, that it has "the profound merit of priority, and, hoping it may make toward the long-desired goal of stability in nomenclature, I have chosen to adopt it," we regret to find in another instance that he deliberately violates the rules of the International Commission by choosing to emend the spelling of the genus *Ithaginis*. If everyone chooses for himself in matters of names we shall certainly not arrive very soon at the desired goal. However, these are but technical matters, which the reviewer may perhaps be pardoned for mentioning, since they are constantly coming to his attention in all sorts of exasperating forms in the varied literature of the day, but we now cheerfully adopt Capt. Beebe's suggestion and pass on to things worth while.

Immediately preceding the systematic part of the work is an admirable introduction of thirty-one pages, giving a résumé of many subjects which are treated more in detail under the various species. This contribution is one of the most important portions of the text and is deserving of careful study by all interested in the general problems of ornithology as well as in the pheasants in particular.

In its perusal we notice that Capt. Beebe follows Sharpe in the general classification of the pheasants, and omits the Turkeys and Guinea fowl which figured in Elliott's monograph, but which are now considered to represent quite independent families. While omitting most of the subfamily *Perdicinae*, which are not popularly regarded as pheasants, and were not included in the family in Elliott's day, he retains in his work two genera, the Blood Partridges and the Tragopans, which Elliot considered members of the family and which are generally considered as pheasants. Thus we see that the word pheasant and the family Phasianidae are by no means coextensive terms. While adopting Sharpe's four subfamilies Capt. Beebe does not do so blindly, and has the satisfaction of citing an excellent character for their separation which we do not think has been previously used, i. e. the order of molt of the tail feathers — a character of particular interest to the reviewer, as he called attention to it in another connection in 1896. Another character which he makes use of is geographic distribution, and "by refusing to include in any single genus species whose ranges coincided or overlapped" he effected "a breaking up or coalescing of certain genera whose status had been in dispute." While strict adherence to this rule in genera of more numerous species would not be practicable the principle involved is one that deserves more consideration than has usually been accorded to it. External modifications of structure, especially in such wonderfully plumaged birds as the pheasants, often obscure their true relationships and these are often revealed by a study of their geographic distribution. Considering this subject further and entirely apart from the systematic relationship of the species, Capt. Beebe concludes that the pheasants are of northern origin and that the farther south we go the greater is their specialization. In this investigation he would we think have been justified in including the twenty-nine genera of *Perdi-*

cine which, not being regarded as "pheasants," have no place in the systematic part of the monograph, but are none the less Phasianidæ, and his conclusions would thereby have been still further strengthened. Under 'Comparative Abundance' we learn that pheasants fall into three groups according to their gregariousness. The Argus and its allies live a solitary life, associated with none of their kind except for a brief period in the mating season; others, like the Kaleege, are eminently gregarious; while still others, like the Tragopans and Jungle Fowl, are usually found in pairs.

Protective coloration comes in for some very intelligent discussion. Capt. Beebe suggests a rather novel test to determine whether a given bird is really protectively colored or not. The wild pheasants which have no experience with man act exactly the same upon his approach as they do in the presence of their natural enemies, and his plan is to observe the bird's realization of its own degree of protection as shown by its actions. Dull colored hen-pheasants almost invariably squatted on the approach of an intruder, thus showing their reliance on their ability to escape observation, while the brilliantly colored cocks immediately took wing, a tacit admission of their lack of protection so far as coloration is concerned. Capt. Beebe is, however, pessimistic as to the possibility of any sort of compromise on the part of those who hold that all animals are protectively colored. As an illustration he humorously states that on one trip he saw some 600 peafowl, each one of which took wing immediately and sought the tops of the highest trees in the neighborhood which commanded the widest outlook — an action that proved to his mind that the bird was not protectively colored. When this was related to a friend who was an advocate of the universal protection idea, he replied, "but think of the 6000 birds concealed by their plumage that you did not see." The author states that he knew from his intimate acquaintance with peafowl that he could not have overlooked any of them, but no conclusive proof could be offered satisfactory to his friend!

There is also some interesting discussion of sexual selection and its part in developing the wonderful plumes of the cock pheasants, this family being notorious for the part that it has played in the elaboration of this and allied theories.

"The thought of the little brown hens picking and choosing among their suitors is charming," says Capt. Beebe, "one would like to think of the hens playing off one cock against another in conscious mental comparison, of appraising this ruff with that patch of gold," etc., etc.; but he adds, "However much I should like to do so I can credit pheasants with no appreciation of the beauties with which they are so generously endowed."

His conclusions are that the whole kaleidoscopic display of the male produces a mental effect upon the hens "not æsthetic, not distinctly critical or attentional, but a slow indirect influence upon the nerves, the arousing of a soothing, pleasing emotion which stimulates the wonderful sequence of instincts which will result in nest-making, egg-laying, the weeks of patient

brooding and the subsequent care of the young." . . . Furthermore, "the male who, either by vanquishing his rivals or who by strength and persistency most frequently and effectively displayed, will win the hen, regardless of whether the actual process be by æsthetic appreciation or by some subconscious hypnotic-like influence."

While we must admit the hypnotic power of the wonderful display of the gorgeous cock-pheasants of many species, we must also, it would seem, admit that all things have a beginning, and how the crude one-wing display of our familiar barnyard cock could have any such hypnotic influence and prove so successful as to start the evolution of the splendid plumage of the Argus and other pheasants we cannot conceive. At the same time we fully admit the strength of Capt. Beebe's contention that we cannot view these things through the bird's eyes nor they through ours. Furthermore we might suggest that the remarkable regularity of the date of migration in transient birds as well as that of the date of nesting would seem to point to the fact that the various instinctive impulses to which our author refers are physiological and are started with a regularity so remarkable that it would hardly seem susceptible of being stimulated by display on the part of the male or by any other external factor. It is not commendable to offer only destructive criticism, but the reviewer must confess himself without any alternative suggestion and is entirely in accord with Capt. Beebe's opening sentence, that "It is staggering to the student of evolution to attempt to explain the origin and development of such a structure as the orange and black ruff of the Golden Pheasant."

It is impossible in the short space of a review to consider the systematic portion of this splendid work in detail. We have already referred to the accounts of the birds in their native haunts. In these Capt. Beebe has managed to incorporate to a remarkable degree the environment of the wild bird, so that we can almost see the scene for ourselves. The sketches are full of what Dr. Spencer Trotter has called the ornithological background. As an example we quote from the account of the Blood Pheasant which our author sought on the 'arctic' meadows of the high Himalayas: "Without warning, the sun dropped behind a distant ridge. It was as if someone had turned out some enormous lamp. Luminous clouds appeared in the air that before had been so clear, and the first whisper of the cold night wind echoed softly in the crags. The insects vanished, and one by one the icicles and rivulets were silenced at the touch of the coming twilight. From a high ravine came the plaintive call of a white-capped redstart, and a gray fox barked from somewhere far off. Then in the rich afterglow, reflected from the mountains of snow, seven birds appeared over the crest of the ridge. They came slowly, one after another, and I knew them at once for the Blood Partridges I had come so far to find. Through my glasses every feather was distinct, every movement clear, as the birds straggled down the slope. Now and then several of them would loiter and pick at the abundant red berries. . . . I watched them eagerly, cau-

tiously — watched them until they vanished among the uppermost ranks of the dwarf rhododendrons. I stood up stiffened with cold and my long waiting. In the west I saw the last pink tinge die out upon the clouds which now hid the snows. As I turned toward camp a single snowflake melted on my face, and I realized anew how grimly winter fights for supremacy far up on the world's roof."

We must make one more quotation, reflecting another side of pheasant history: Capt. Beebe says: "My survey of their haunts made me pessimistic in regard to their future. In India there seemed a slight lessening among the natives of the religious regard for wild life which has been such a boon to the birds in this densely populated part of the world. In the Malay States great rubber plantings threaten the whole fauna of some places. In Nepal and Yunnan the plume hunter is working havoc. In China the changing diet from rice to meat and the demand in Europe for ship-loads of frozen pheasants has swept whole districts clear of these birds." The great war has checked many activities that have made for the destruction of the pheasants, but this, he adds, is perhaps "the last pause in the slow, certain kismet, which from the ultimate increase and spread of mankind, must result in the total extinction of these splendid birds."

After reading this we are more than ever grateful to all who have contributed to make this beautiful work possible. While Capt. Beebe may be the only man who has studied all the types of these wonderful birds in their native haunts,—perhaps the only one who will enjoy that privilege,—his facile pen and ability as a photographer combined with the talents of his corps of artists and the generous support of Col. Küser, have made it possible for thousands of others to enjoy the reproduction of that which it was given to him to see in reality.—W. S.

Leo Miller's 'In the Wilds of South America.'¹—When Dr. Frank M. Chapman began his investigations of South American bird life in 1911 he took with him to Colombia Leo E. Miller, a young man then quite unknown in the field of zoological exploration. So readily did Mr. Miller adapt himself to the explorer's life and such an adept field collector did he become that he was kept in South America, in the interests of the American Museum, almost continuously from that time until America entered the war. During these six years he practically circled the coast of the southern continent north of Buenos Ayres and visited every one of the republics, carrying on active collecting and exploration in eight of them.

While the technical results of at least a part of Mr. Miller's work have been published by Dr. Chapman and others, mainly in the 'Bulletin' of the American Museum, he has himself prepared the account of his travels,

¹In the Wilds of South America, Six Years of Exploration in Columbia, Venezuela, British Guiana, Peru, Bolivia, Paraguay and Brazil. By Leo E. Miller of the American Museum of Natural History, with over 70 illustrations and a map. New York, Charles Scribner's Sons, 1918. Svo. pp. 1-424.

elaborated from his journals, with side lights on the natural history, physical characteristics and the varied peoples of the countries which he visited and has embodied them in the attractive volume before us.

The narrative is written in a clear, unassuming manner, which holds one's attention from chapter to chapter, while excellent photographic illustrations by the author add to the interest of the text. Before we reach the bottom of the first page we encounter a description of the Brown Pelicans of Buenaventura Bay, Colombia, and scarcely a page is passed that we do not find reference to one or more representatives of the wonderful neotropical avifauna, or the less known mammals of the South American continent.

Long museum experience may give one a reasonable familiarity with South American birds, so far as the plumage of the species is concerned, but we know nothing in this way of their habits — how they occur and where; whether conspicuous or not; their relative abundance; the character of their calls, their songs, etc., and Mr. Miller's book gives us just this knowledge of the most striking species. We read his narrative and encounter one after another the birds which attract the attention of the traveller just as we do the striking features of the scenery, the plant life and the towns and villages, and can almost imagine that we are on the trail ourselves.

The opening chapters treat of some of the Colombian explorations which formed the basis of Dr. Chapman's 'Distribution of Bird Life in Colombia,' reviewed in 'The Auk' for April, 1918. Then follows a trip up the Orinoco to the mysterious Mt. Duida, and a short sojourn in British Guiana. We then pass to the Roosevelt expedition, to which Mr. Miller was attached as one of the field naturalists, and read of hunting and collecting experiences in Paraguay and Brazil and the descent of the Rio Gy-Parana, which one part of the expedition explored while Col. Roosevelt and the rest of the party descended the Rio da Duvida (now the Rio Teodoro). Mr. Miller's next expedition was down the west coast of Peru, across to central Bolivia and down into Argentina.

Besides the constant incidental mention of birds throughout the text, two chapters are devoted almost entirely to ornithological matter. One of these is entitled 'In Quest of the Cock-of-the-Rock,' a search which resulted in the discovery of the nest eggs and young of this curious, crested, scarlet Cotinga, an inhabitant of the subtropical zone of the Colombian Andes, its nesting site being the wet cliffs adjoining mountain waterfalls in the densest forest. 'Bird-nesting in Northwestern Argentina' is another chapter dealing largely with birds, including an account of a search for an obscure species of Tapacola (*Scytalopus*). Incidentally there is considerable discussion of the nesting habits of the Cowbird of the region, *Molothrus bonariensis*, and of its most frequent victim, the Ovenbird (*Furnarius rufus*). Not infrequently the Cowbird lays several eggs in the same nest and in the case of one Mockingbird's nest Mr. Miller found no less than fourteen eggs

of the intruder. Another Cowbird *M. badius* makes a nest of its own and rears its own young.

Members of the Audubon Society will be pleased to know that in Argentina there are game laws and closed seasons, and that a permit is necessary in order to collect specimens, while the collector will rejoice to learn that officials are most courteous and obliging, and that the necessary permit was secured in a few hours which included a railway journey to the nearest city.

Mr. Miller's book is one that we can heartily recommend to the general reader who wishes to know something of South America, from the everyday experience of the traveller, both in the long settled districts and in the wilderness, while it should be in the library of every ornithologist and mammalogist. The day is past when the student of this or that branch of natural science can limit his reading to technical monographs. He must know something of the animal in its natural surroundings in order to appreciate the relationship between color and background, adaptation and environment; and to enable him to extend his studies beyond the mere description of a new species based on a museum specimen. And as a contribution to this field of literature Mr. Miller's book holds an important place.

We regret that there is no index, as it is difficult to find again some paragraph that deals with a certain species in which we may be interested, and the utility of the volume is impaired to that extent. It is also regrettable that the author has seen fit to make use of the names of certain familiar North American birds — such as Red-headed Woodpecker and White-throated Sparrow — for South American species which are only remotely related to them, as in spite of the citation of the correct technical names many popular readers will imagine that these familiar birds occur in South America as migrants. In the 'Contents' there seems to be an error of some kind in dividing the book into parts. Part one, headed "Colombia," includes nine chapters all devoted to that country, but part two, headed "Venezuela," contains seventeen chapters only two of which have anything to do with this republic. This however is a trifling matter. The typography and general appearance of the volume from the standpoint of the bookmaker are excellent.— W. S.

Van Oort's Birds of the Netherlands.¹— We are in receipt of parts I and II of an important illustrated work on the birds of Holland by the well known ornithologist, Dr. E. D. Van Oort, Director of the Natural History Museum at Leiden. From a prospectus by the author and the publisher,

¹ Ornithologica Neerlandica [de Vogels van Nederland] door [Dr. E. D. Van Oort] Directeur van 's Rijks Muscum van Natuurlijke Historie | te Leiden | Met ongeveer vierhonderd gekleurde Platen [in 's Gravenhage | Martinus Nijhoff. [Lange Voorhout, The Hague, Holland.] Royal quarto, Part I, pp. 1-24, plates 1-10; part II, pp. 25-56, plates 11-20. [1918]. Price, 12.50 Gld. per part.

Martinus Nijhoff, we learn that the complete work is to consist of five volumes, two of eight parts, two of seven and one of ten. Each part will contain ten plates and four or five parts will be issued annually so that there will be in all 400 plates while the undertaking will require from eight to ten years for completion.

The two parts already issued give promise of a work that will be the standard authority on the birds of the Netherlands and a fitting companion to Mr. Van Pelt Lechner's '*Oologica Neerlandica*' published a few years ago by Mr. Nijhoff, and reviewed in these columns. The text of the present work consists of sections dealing with each order, family and genus, covering structural characters and matters of nomenclature and distribution, as well as keys to the genera and species. Under each species are given the original reference and a full synonymy of references to the bird in the Netherlands; then follows a list of the Dutch vernacular names and the most familiar English, French and German names. The various plumages are described with more than ordinary detail, with measurements of specimens, and there are full accounts of the distribution of the species, dates of occurrence in the Netherlands and manner of nesting, with descriptions and measurements of the eggs.

The colored plates, from paintings by Mr. M. A. Koekkoek, are excellent of their kind, and fully up to the standard of most works of this sort; the coloring is accurate and all matters of detail are worked out with the greatest care. Of course they are not to be compared with the work of Thorborn, Fuertes and some of the other leaders in bird portraiture, who present to the life the characteristic actions and postures of the birds as well as colors and proportions, but they are nevertheless admirable illustrations, well above the average. There is some range of variation in the execution too, and the plates of the Little Grebe, Fulmar and Storm Petrel are worthy of especial mention. A particularly praiseworthy feature of the illustrations is the large number of figures that are given of the same species in order to show the variations due to season, sex and age, which is a great help to a proper understanding of the plumages.

The text is, of course, wholly in Dutch but nevertheless Dr. Van Oort's work is one which should be in all reference libraries, in this country as well as in Europe.

In matters of nomenclature the author seems to be quite up to date so far as can be judged from the two parts of the work before us. The name *Colymbus* is, however, used for the Loons and *Podiceps* for the Grebes, apparently on the basis of Gray's designation of *arcticus* as the type of the former (in 1855); this, however, we fear cannot hold as Gray was not dealing with the tenth edition of Linnæus' '*Systema*,' when the designation was made, but with that of 1735.

The typography, paper and general makeup of the book are excellent and fully up to the publisher's high standards. We congratulate both author and publisher upon the first parts of this notable work and wish them all success in completing their task.—W. S.

Mathews' 'The Birds of Australia.'¹—The last part of Mr. Mathews' work that we have received covers the families Caprimulgidae and Micropodidae and begins the Cuculidae. There are nine plates and while most of them are up to the standard of the previous parts that of the Swiftlets appears particularly crude in comparison with the present-day standard of ornithological illustrations.

In the treatment of the Nightjars we note two new genera, *Rassornis* (p. 234), type *Caprimulgus macrurus* Horsf., and *Eximiornis* (p. 235), type, *C. eximius* Temm., and three new races: *Rassornis macrurus coincidens* (p. 241), Cairns, Queensland; *R. m. rogersi* (p. 242), Melville Island; and *R. m. aruensis* (p. 242), Aru Islands. The views of various recent students of the geographic races of this species as quoted by Mr. Mathews seem so irreconcilable that we question whether when subdivisions are carried to the present limits, where individual opinion is in many cases the most important factor in the discussion, we shall ever have any generally recognized results.

In connection with his treatment of the Swifts he goes at length into the systematic arrangement of the *Chaturinae*, concluding that the presence of spines on the tail feathers of two genera is not necessarily evidence of close relationship, but that caudal spines may develop independently in genera not closely connected phylogenetically while a single genus may show them in various stages of development. His scheme, with the new genera which he proposes, is as follows:

LARGER FORMS.

Hirundapus Hodgs. Pallenia Bon. Streptoprocne Oberh.

SMALLER FORMS.

American. Chætura Stephens.

West African. Telacanthura gen. nov. (p. 264), type *Chætura ussheri* Sharpe.

Neafrapus gen. nov. (p. 264), type *C. cassini* Selater.

Alterapus nov. gen. (p. 264), type *C. sabini* Gray.

Indo-Malayan. Rhaphidura Oates.

Indicapus nov. gen. (p. 265), type *Acanthylis sylvatica* Tickell.

Madagascar. Zoönavena gen. nov. (p. 265), type *C. grandidieri*.

Philippines. Mearnisia Ridgw.

New Guinea. Papuanapus gen. nov. (p. 266), type *C. novæ-guinæ* D'Alb. and Salvad.

Cypseloides Streubel.

Nephocetes Baird.

Aerornis Bertoni.

Chæturellus gen. nov. (p. 267), type *Hirundo rutila* Vieill.

¹ The Birds of Australia. By Gregory M. Mathews. Vol. VII, Part III., August 26, 1918.

We notice but one new swift, *Zoöna frantica oberholseri* (p. 253), for which no type specimen is cited though we infer that the type locality is the Fiji Islands.

In connection with the name *Nephæcetes* which Mr. Mathews changes to *Nephocates* he has perhaps overlooked the article in 'The Auk' 1899 (pp. 20-23), by the late Dr. Gill in which it is shown that the former spelling is the one which occurs first in the volume. While its use on p. xviii (Baird, Cassin and Lawrence, Birds of North America) may be regarded as a *nomen nudum* that on p. xxix, where it is definitely connected with the species *niger* Gmelin, cannot be disregarded.

Under the Cuckoos we note as new: *Vidgenia* (p. 311) type, *Cacomantis castaneiventris* and a race *C. rubricatus eyeri* (p. 320), from Eyer's Peninsula, S. Australia.

While the text as usual is largely devoted to nomenclature and classification, there are many notes of importance on the habits of the various species, and a vast amount of data on the parasitism of the Cuckoos.

There is a typographical error to which attention might be called on p. 247, where Mr. DeWitt Miller's name is cited as "Delbitt" Miller.

Mr. Mathews has now covered 404 species of the Australian avifauna and by consulting his 'Reference List' we should judge that he had his gigantic task more than half completed. He certainly is to be congratulated upon the persistence with which it has been carried on in spite of the war and its resultant hindrances, and we wish him all speed and success with the succeeding parts.—W. S.

Beebe's 'Jungle Peace.' ¹—In 'The Auk' for 1917 we had the pleasure of reviewing Capt. Beebe's 'Tropical Wild Life in British Guiana,' the report of the first season's work at the tropical research laboratory of the New York Zoölogical Society. This was of necessity a record of scientific achievement and was written in that spirit. In 'Jungle Peace' however, the author tells the same story in a way that appeals more directly to the layman. But be he scientist or layman, the reader who is fond of nature or of travel, and who picks up Capt. Beebe's little volume, will not be likely to lay it aside until he has read it through. To use his own words, the author has in this volume stolen "quietly up the side aisle of the great green wonderland, looking at all things obliquely, observing them as actors and companions rather than as species and varieties, softening facts with quiet meditation, leavening science with thoughts of the sheer joy of existence."

There is much the same charm in his writing that one finds in John Burroughs' books, but his field is much broader and he opens up a new world to his readers. The wild life of which he writes is far beyond the

¹ *Jungle Peace*. By William Beebe, Curator of Birds, New York Zoölogical Park, and Director of Tropical Research Station. Illustrated from Photographs, New York. Henry Holt and Company, 1918, pp. 1-297, price, \$1.75.

experience of most of us, but we have long desired just such a vivid and intimate picture of this wonderful tropic country as Capt. Beebe has given us.

The title of the little book is explained in the first chapter. The author had played his part in the great struggle that has just come to a close in Europe and after the horrors of war he says "the mind seeks amelioration—some symbol of worthy content and peace—and for my part I turn with all desire to the jungles of the tropics. . . . The peace of the jungle is beyond all telling."

The chapters entitled, 'Sea-wrack' and 'Islands,' cover the voyage to British Guiana with visits to the Lesser Antilles and Barbados; while the others: 'The Pomeroun Trail,' 'A Hunt for Hoatzins'; 'Hoatzins at Home'; 'A Wilderness Laboratory'; 'The Convict Trail'; 'With an Army of Ants "Somewhere" in the Jungle', and 'Jungle Night,' treat of the Bartica District, British Guiana, and that on 'A Yard of Jungle' relates to Para at the mouth of the Amazon. All but three of the chapters have appeared in 'The Atlantic Monthly' and the many who enjoyed reading them there will be glad to have them brought together in the handy volume.—W. S.

Riley on a Collection of Birds from Northeastern Siberia.¹—Mr. Copley Amory, Jr., accompanied the Koren Expedition to the Kolyma River region of northeastern Siberia in 1914 and obtained 228 specimens of birds and a few eggs which were all presented to the National Museum and are here reported upon by Mr. Riley. As Thayer and Bangs had already described a collection made by Mr. Koren on a previous expedition to the same region it was not to be expected that any new forms would be included in the present material, but many notes of interest on plumage and relationship are presented as well as some field notes by Mr. Amory. Seventy-six species are listed and of all but one of these specimens were obtained.—W. S.

Shufeldt on the Skeleton of the Kea Parrot.²—Dr. Shufeldt has had the opportunity of studying the skeleton of a specimen of *Nestor notabilis* recently received at the National Zoölogical Park, in a shipment of nine individuals presented by the New Zealand Government, this individual having died en route. He has prepared ten admirable photographs showing all the portions of the skeleton, and these have been excellently reproduced. There is also a detailed description of the bones, covering thirteen pages, in which there is occasional comparison with *Ara chloroptera* and *Amazona* and with Mivart's figure of the tongue of *Lorius flavopalliatius*.

¹ Annotated Catalogue of a Collection of Birds made by Mr. Copley Amory, Jr., in Northeastern Siberia. By J. H. Riley. Proc. U. S. Nat. Mus., Vol. 54, pp. 607-626. (Issued October 28, 1918.)

² The Skeleton of the "Kea Parrot" of New Zealand (*Nestor notabilis*). The Emu, XVIII, Part I, July 1, 1918, pp. 25-43.

There is a preliminary review of the arrangement of *Nestor* in relation to other parrots in the classifications of various authors, and we were in hopes that Dr. Shufeldt, with the material at his disposal, would shed some further light on the subject, but upon turning to the conclusions we are disappointed to find only that "the family Nestoridae may now be considered an established fact, in so far as the morphology of *Nestor notabilis* is concerned." However, the plates and detailed description should aid others to make fuller comparisons with skeletons of the supposed allies of *Nestor* when opportunity offers.—W. S.

Murphy's Photographs of South Georgia Birds.—In the American Museum Journal for October, 1918, Mr. Robert C. Murphy has a number of photographs of the birds of South Georgia Island accompanied by explanatory descriptions. Full accounts of these species have appeared in his several papers in 'The Auk' and six of the photographs were previously published in connection with them. Several of those now published have been enlarged and are printed with more extended backgrounds adding much to their appearance.—W. S.

Taverner's Recent Papers on Canadian Birds.—In the 'Canadian Alpine Journal,' Mr. P. A. Taverner has published a list of birds secured or observed by the Canadian Geological Survey Expedition, mainly by Mr. Wm. Spreadborough, in Jasper Park, Alberta, during the summer of 1917. Most of the notes deal with species supplementary to Mr. J. H. Riley's list for the same region, published in the Journal for 1912, and they are numbered continuously with it, from 79 to 108. The few notes on species listed by Riley are entered without numbers. There are some interesting remarks on the southward movement of Horned Owls and Goshawks and their destruction of the Grouse, and also some systematic conclusions of interest. The two Song Sparrows obtained on the expedition, topotypes of Riley's *Melospiza m. inexpectata*, are regarded as closest to a series of *merrilli* identified by Oberholser and Mr. Taverner fails to find "the characters described by Riley as characteristic of his new form." The Canada Jays he regards as nearest to *Perisoreus c. fumifrons* if that is a tenable subspecies, certainly nearer to *canadensis* than to *capitalis*. The Flickers were none of them pure, with the *cafer* tendency stronger than the *auratus*.

Another important paper by the same author is on 'The Hawks of the Canadian Prairie Provinces in their Relation to Agriculture.'² This corroborates the results obtained by the investigations of the U. S. Dept. of Agriculture, in that the majority of hawks, with the exception of the Accipiters, are beneficial. The damage done by Gophers both as destroyers

¹ Addenda to the Birds of Jasper Park, Alberta. Canadian Alpine Journal, Vol. IX, 1918, pp. 62-69.

² Museum Bulletin No. 28, Canadian Department of Mines. Biol. Series, No. 7, August, 1918.

of crops and as carriers of cattle disease is emphasized, as well as the importance of conserving the Buteonine hawks as a natural check upon them when their chief enemy the Coyote disappears. The plea that has recently been advanced in Pennsylvania in defense of removing protection from these birds—i. e. that the farmer cannot distinguish one hawk from another and therefore does not know when he can kill a hawk, if some are protected and others not, is disposed of in the following words: "With so much at stake a farmer or sportsman is no more justified in advancing ignorance as an excuse than he is in proclaiming his inability to distinguish between crops and weeds... discrimination is a part of his business and as such should be studied." Eight colored figures of hawks from clever paintings mainly by F. C. Hennessey illustrate the paper.—W. S.

'Aves' in the Zoological Record.¹—Mr. W. L. Slater has again ably catalogued the ornithological literature of the world, for the year 1916. Titles to the number of 942 are listed and systematically catalogued, an increase of eight over 1915. We notice that the German ornithological journals were accessible in England for at least a part of 1916, while none have reached 'The Auk' or any of the American libraries, so far as we are aware, since the issues for July or August, 1915! Evidently the British ornithologists are not inclined to adopt Lord Walsingham's suggestion (cf. *Nature*, Sept. 5, 1918) that for the next twenty years at least scientific men shall by common consent ignore all papers published in the German language. Dr. W. J. Holland's reply to Lord Walsingham's proposition (*Science*, Nov. 8, 1918) should be read by all interested in this matter, and we think all fair-minded persons will agree with him that there are plenty of ways to secure justice against the Germans without disrupting the whole underlying framework of scientific nomenclature, which we have been at such pains to build up. Such arbitrary action is, as he says, only an attempt "to beat the Prussians by Prussianizing ourselves." We are therefore very glad to find the last installment of 'Aves' as complete as its predecessors with the contributions from the central powers included, no matter how strictly we may hold them accountable for the crimes of the war. The value of Mr. Slater's compilation to the working ornithologist we have emphasized on a former occasion and we can only endorse what was said then and again commend the Zoological Society for maintaining this record for us during the strenuous years that have just passed.—W. S.

Proceedings of the Linnæan Society of New York.²—Besides the usual numerous notes dealing mainly with the vicinity of New York City

¹ *Zoological Record*, Vol. LIII, 1916. *Aves*. By W. L. Slater, M. A., pp. 1-72. August, 1918. Printed for the Zoological Society of London, sold at their House in Regent's Park, London, N. W. Price six shillings.

² Abstract of the Proceedings of the Linnæan Society of New York for the year ending March 12, 1918, No. 30, 1917-1918. Issued September 18, 1918, pp. 1-38, one plate.

there are two special papers. The first, by John Treadwell Nichols, is entitled, 'Bird Notes from Florida' and comprises notes on twenty-six species observed while cruising between Miami and Sanibel Light, from March 28 to April 21, 1917. Besides Mr. Nichols' records of birds seen, there is a discussion of the spring migration including a record kept by Dr. and Mrs. G. Clyde Fisher at De Funiack Springs, northwest Florida, in the spring of 1909, and some observations on the habits of the Brown Pelican by Dr. Russell Coles.

The second paper is by Mr. Jay A. Weber on 'Bird Temperatures,' which includes records for one to three individuals, of sixty-five species of eastern North American birds. For Passerine species, which make up the bulk of the records, the temperatures ranges from 106.4 to 111.2. Mr. Weber declines to attempt to draw any deductions from his records, as he does not regard them as sufficiently complete. He also raises a possible question of accuracy in such records, since the live bird is in such a state of excitement at the time of taking the record that the temperature may, for that reason, be above the normal, while in the case of a recently killed bird the shock may have the same effect. The list is a valuable contribution to a somewhat neglected subject.—W. S.

Annual Report of the National Association of Audubon Societies.

— In these war years when many institutions and societies have been hard pressed to keep from a temporary cessation of their activities the National Association of Audubon Societies has been able to continue without any reduction in the scope or extent of its activities, which is greatly to the credit of the officers in charge of its work. Realizing at the outset the important part that bird protection could play, as a guard against crop destruction by noxious insects, the Society made its appeal to the public on these lines and met with immediate response. In the days of food conservation the practical value of the Society's work has appealed to the people as never before.

The need of constant watching of the actions of the State Legislatures in relation to bird protection has been specially illustrated during the past year. The Gulls breeding on the Maine coast islands were assailed as being detrimental to sheep grazing, and the Brown Pelican in the Gulf States was branded as a destroyer of fishes needed for food, while efforts were made to wrest from the Government title to the Klamath and Malheur Bird Reservations in order to convert them into ranching country. The Society has been instrumental in demonstrating that the Gulls were beneficial to the sheep grazers, and that the Pelicans fed almost entirely on species not used for food, and one of the agents is now working to secure legislation in Oregon to ensure the permanent preservation of the bird reservations. In spite of all the published scientific data, laws are con-

¹ 'Bird-Lore' November-December, 1918, pp. 453-560.

stantly being proposed to meet ignorant or selfish wishes for the destruction of some bird or other, and the constant attention of such a body of trained men as the Audubon Societies provide is necessary to controvert such action.

We can only speak in this connection of these few activities of the Association; everyone should get the report and read it for themselves. Besides the reports of the field agents,—always interesting and instructive,—there are reports from seventeen state societies and forty-two bird clubs and other affiliated organizations. In the report of the treasurer we note that the annual membership contributions amount to nearly \$27,000; while a single anonymous subscription to the children's educational fund is for \$20,000. Truly the pioneers in this work can feel amply repaid for the time they unselfishly devoted to starting the movement for bird protection.—W. S.

Zimmer on Rare Birds from Luzon and Mindoro.¹—Mr. Zimmer presents notes on specimens of forty-two species, which on account of rarity, unusual distribution, or peculiar plumage are worthy of record. The specimens are from collections made by himself during the years 1913–1916. One new form *Hyloterpe crissalis*, a Thickhead Shrike, is described as new (p. 230), from Mt. Banahao, Laguna, Luzon. A number of specimens of the hitherto unique *Zosterornis affinis* McGregor, were also obtained.—W. S.

Recent Papers by Wetmore.²—Mr. Wetmore has recently made a study of the anatomy of *Nyctibius* and upon comparing it with *Podargus* and several of the Caprimulgidae he comes to the conclusion that the differences between the Podargi and the Caprimulgi, recognized as superfamilies of the suborder Nycticoracidae by Ridgway, are not so transient and sharply defined as has been supposed. *Nyctibius* appears to be about midway between the Caprimulgidae and the Podargidae and of twelve principal structural characters, used in the classification of these birds, it agrees with each group in five particulars. Mr. Wetmore would arrange the Nycticoracidae in two superfamilies, the Steatornithoidae and the Caprimulgoidae, the former containing the single genus *Steatornis* and the latter the families Podargidae, Nyctibiidae, Aegothelidae and Caprimulgidae, the last being regarded as the highest. Attention is called to the need of further study of the anatomy of *Aegotheles* and *Batrachostomus* in order to arrive at a clearer conception of their exact relationship. Our Australian coworkers should be able, with Mr. Wetmore's paper as a basis,

¹ A Few Birds from Luzon and Mindoro. The Philippine Jour. of Science, Vol. XIII, Sect. D. No. 5, September, 1918, pp. 219–232.

² On the Anatomy of Nyctibius with Notes on Allied Birds. By Alexander Wetmore. Proc. U. S. Nat. Mus., Vol. 54, pp. 577–586.

to supply the desired information, or to furnish him with some of the needed material.

In a second paper¹ he describes some bird bones from Kitchen Midden deposits on the islands of St. Thomas and St. Croix. These represent nine species from the former and seven from the latter. A femur and tibia from St. Thomas form the basis of a new genus and species of Rail-like bird, here named *Nesotrochis debooyi* (p. 516), while some vertebrae from a large cooking vessel buried low in the deposit proved those of *Gallus*, agreeing exactly with recent bones of a female domestic fowl.—W. S.

Five Contributions to Economic Ornithology by Collinge.—Dr. Walter E. Collinge of the University of St. Andrew's, Scotland, in recent years has been the most active student of Economic Ornithology in Great Britain. It is of interest to note that he is convinced of the superiority of the volumetric method of analyzing the contents of birds' stomachs, he being the first British investigator to adopt it. Two² of his recent papers dwell more or less on this topic and in one of them he notes that upon reëxamination of his material representing the missel-thrush, adopting the volumetric instead of the numerical method he formerly used, he is compelled to reverse his estimate of its economic value. This is a striking illustration of the difference in results under the two systems. In this paper Dr. Collinge briefly treats of the economic status of eight common British birds of which two are distinctly injurious, viz., the House Sparrow and the Wood Pigeon; two are too numerous, and consequently injurious, viz., the Rook and the Sparrow Hawk; one is locally too numerous, viz., the Missel Thrush; and four are highly beneficial, viz., the Skylark, the Green Woodpecker, the Kestrel, and the Lapwing.

The other three papers³ by Dr. Collinge note the necessity of rational bird protection in Great Britain. All inclusive protection urged by propagandists has been overdone, and reaction has followed. Despite the long existence of a government bureau for the scientific investigation of economic ornithology, the United States has not entirely escaped harm resulting from the activities of bird protection zealots. It will be well if the lessons we have had are taken to heart and trouble avoided in the future. Dr. Collinge's summing up of the situation in Great Britain may be quoted:

"1. That in the past the question of wild bird protection and destruction has never received really serious consideration. The objects sought

¹ Bones of Birds Collected by Theodor De Booy from Kitchen Midden Deposits in the Islands of St. Thomas and St. Croix. By Alexander Wetmore. *Ibid.*, pp. 513-522.

² On the Value of the Different Methods of Estimating the Stomach Contents of Wild Birds. *Scottish Naturalist*, May 1918, pp. 103-108, 2 figs.

Some Recent Investigations on the Food of Certain Wild Birds. *Journ. Bd. Agr. (London)*, Vol. XXV, No. 6, Sept. 1918, pp. 668-691, 17 figs.

³ Wild Birds in Relation to Agriculture, *Jour. Land Agents' Society*, Vol. XVII, No. 5, May 1918, pp. 202-208, 1 fig.

Wild Birds and Legislation, *Ibid.*, No. 7, July 1918, pp. 278-285.

The Value of Insectivorous Birds, *Nature*, July 25, 1918, Reprint pp. 1-4.

in most of the Acts of Parliament upon the subject have been largely of a selfish nature and not for the good of the country."

"2. That the majority of these Acts have been ill-considered and often hastily prepared, many of them have been repealed and others frequently amended or modified."

"3. That no attempt has been made by those who advocate the protection of wild birds, to understand the problem presented by wild bird life. Blindly, and often strongly prejudiced, they advocate protection for all birds, and protection only."

"4. That such an attitude is calling forth a deep resentment from those who have to live by the products of the soil, many of whom having waited in vain for repressive measures, have now taken to destroying wholesale all bird life."

"5. That the irresponsible advocacy of uniform protection is indirectly contributing more than anything else to the wanton destruction of many of our most useful birds. 'Some of the very greatest friends that our nation has are being destroyed without mercy . . . a defensive force upon which most of our prosperity depends.'"

"6. That the immediate need of the present is for a wide and comprehensive Act that will give protection to all non-injurious or beneficial birds, and provide adequate repressive measures for those species which have become too numerous and destructive."—W. L. M.

Chapman's 'Our Winter Birds.'—Dr. Chapman has the happy faculty of accurately feeling the pulse of the bird-loving public and supplying just what they need almost before they realize their wants. It was so with the appearance of his 'Hand-book' many years ago and his 'Bird Life' and 'Warblers' in more recent years. Still more recently appeared a little monograph, one might almost say a primer, on bird migration under the title 'The Travels of Birds,' and now follows a similar little book on 'Our Winter Birds,' just the thing for school use and for beginners in bird study.

On account of the comparative scarcity of birds in winter there seems to be a special charm at this season in rounding up the whole bird population of one's neighborhood, as evidenced by the popularity of 'Bird-Lore's' Christmas lists, and this little book will do wonders in teaching the public what birds may be seen in the cold months of the year and doubtless prevent many a mistake in identification.

On the inside of the covers are small figures in colors of the common residents and winter visitants from admirable paintings by Mr. E. J. Sawyer, which do away with the necessity of long descriptions and permit the author to devote practically all the text to the habitat, habits and characteristic actions of the species.

The text is divided into four parts, 'Introduction,' 'Home Birds,' 'Field

¹ Our Winter Birds. How to Know and How to Attract. Illustrations by Edmund J. Sawyer. D. Appleton and Company, New York and London. 1918, 12mo. pp. i-ix—1-180. Price \$1.25 net; by mail \$1.35.

Birds' and 'Forest Birds,' and under these some fifty species are discussed in the author's well known attractive style, while the two plates contain sixty-three figures. The book represents a clever idea well carried out. The publishers state that the present edition is designed especially for school use and is to be followed by another, more profusely illustrated for the general reader.—W. S.

The Ornithological Journals.

Bird-Lore. XX, No. 5. September-October, 1918.

The Oven-bird in Minnesota. By Thomas S. Roberts, M. D.—An admirable popular account with photographic reproductions of nests.

A Day's Sport with the Red-backs and Greater Yellow-legs. By Verdi Burtch.—With good photographs of both species.

Some Notes on the Ruffed Grouse. By H. E. Tuttle.

The Horned Larks form the subject for the articles of Migration and Plumages by Drs. Oberholser and Chapman respectively, with a plate by Fuertes illustrating five of the twenty-three races covered by the text.

Bird-Lore, XX, No. 6, November-December, 1918.

Notes from a Traveler in the Tropics. By Frank M. Chapman.—Dr. Chapman, who is on a mission to South America for the American Red Cross, describes the country through which he passed and the bird-life which he encounters en route. The first installment covers the coast-line trip to Cuba with illustrations of the Man-o'-war Bird and the Ani by Louis Agassiz Fuertes.

When the North Wind Blows. By A. A. Allen.—Winter Bird-life at Ithaca, N. Y., with excellent illustrations from photographs by the author.

Homeland and the Birds. By Mabel Osgood Wright.—A plea for special efforts at bird protection during the war.

A Wild Duck Trap. By Verdi Burtch.—Caught by the freezing ice on the harbor at Branchport in a small open area where they starve to death.

The papers on plumage and migration treat of the Magpies, and two thirds of the number are taken up with the annual report of the National Association of Audubon Societies.

The Condor. XX, No. 5. September-October, 1918.

Notes on the Nesting of the Mountain Plover. By W. C. Bradbury.—A study of the bird at a spot some twenty miles east of Denver, Colo., with numerous excellent illustrations from photographs.

Frank Stephens—An Autobiography.—A valuable historical article with portrait.

Evidence that Many Birds Remain Mated for Life. By F. C. Willard.—The evidence is mainly the fact that pairs of birds built in the same situations year after year. The author admits that it is not conclusive and to an unprejudiced mind such facts would seem to point rather to the fact that one of the pair returned to the same spot in successive years. Bird-

banding experiments have shown in several instances that of a banded pair of nesting birds only one was found nesting at the same spot in the following year, its mate being a different individual.

A Return to the Dakota Lake Region. (Continued.) By Florence Merriam Bailey.

Some Oceanic Birds from the Coast of Washington and Vancouver Island. By Stanton Warburton, Jr.

Description of a New Subspecies of *Cyanolæmus clemenciae*. By Harry C. Oberholser.— *C. c. bessophilus* (p. 181) Chiricahua Mts., Arizona, the bird of the southwestern United States and Chihuahua, is separated from true *C. c. clemenciae* which is restricted to northeastern, central and southern Mexico.

Some Summer Birds of Alert Bay, British Columbia. By P. A. Taverner.— An annotated list of forty species.

The Wilson Bulletin. XXX, No. 3. September, 1918.

The Brown Pelican,— A Good Citizen. By Alfred M. Bailey.— A timely refutation of the charges made against this bird.

Notes on the February Bird-life of Southern Mississippi and Louisiana. By Chreswell J. Hunt.

A Vulture Census and Some Notes. By John Williams.— Valuable statistics on the habits and abundance of the Black and Turkey Vultures at St. Marks, Fla.

Some Birds along the Trails of Glacier National Park. By P. E. Kretzmann.

Birds about our Lighthouse. By John Williams.— September 22–October 5, 1917 at the mouth of St. Johns River, Florida.

The Oologist. XV, No. 9. September 1, 1918.

Pennsylvania and New Jersey Nesting Dates for 1915. By R. F. Miller.

South African Shrikes. By O. O. C. Nicholls.— In this article we notice upward of thirty typographical errors. Unfortunately this fault is rather frequent in 'The Oologist,' especially in the case of technical names. These are always difficult for both compositor and proof-reader and in a popular journal it would seem far better to omit them altogether than to continually misspell them. A number of contributors we notice have adopted this practice already.

The Oölogist. XXXV, No. 10. October 1, 1918.

Breeding Birds of the Pocono Mountains [Penna.] By A. D. McGrew.

The Oölogist. XXXV, No. 11. November 1, 1918.

An Annotated List of Birds Observed from May to July in Central Logan County, Illinois. By A. D. DuBois.

Some Common Land Birds Found in the Immediate Vicinity of McKeesport, Penna. By Thos. L. McConnell.

The Ibis. X Series, VI, No. 4. October, 1918.

The Reversed Under Wing-coverts of Birds and their Modifications, as exemplified in the Birds of West Africa. By George L. Bates.— A very

important contribution to a rather neglected subject. The major and median under wing-coverts, as many may know, are reversed, that is to say the exposed side is the under side of the feather. Moreover they overlap one another in two ways, either in the same way as the remiges or in the opposite way, and they may be reduced in size or be in part lacking. The differences which they exhibit in these respects may naturally be of much importance as giving an intimation of relationships between different groups and Mr. Bates offers his notes with an idea of their use in this connection. While he does not consider them sufficiently complete for reaching any general conclusions he calls attention to the fact that the Owls and Nightjars show no tendency whatever to the condition prevailing in the Picarian families, that the Parrots show no resemblance to the Cuckoo type nor the Swifts to that prevailing in the Kingfishers and Woodpeckers.

Notes on Recently Described Races of Siamese and Malayan Birds, with a Description of one New Race. By H. C. Robinson and C. Boden Kloss.— This paper and a reply by Mr. E. C. Stuart Baker deal with the validity of various new forms described mainly by Baker and Kloss. The brevity of many descriptions and the impossibility of recognizing the bird described, without access to the type have already been discussed in the review pages of 'The Auk,' and we heartily endorse what these authors have to say in this line. While the status of some of the forms discussed is apparently settled, in the majority of cases each side maintains their opinion, and we have still another illustration of the impossibility of agreement where differences are so slight that personal opinion is the main criterion in deciding on their recognizability.

Notes upon European Birds met with during a Short Visit to South Africa. By B. B. Riviere.

A List of the Birds of the Anglo-Egyptian Sudan, based on the Collections of Mr. A. L. Butler, Mr. A. Chapman and Capt. H. Lynes, and Major Cuthbert Christy. Part II. By W. L. Slater and C. Mackworth Praed.— This contribution of 119 pages concludes the Passeres. As in the preceding instalment many species are considered with regard to all their geographic races and new forms are described both from the Sudan and elsewhere. We notice the following new forms proposed: *Cinnyris osea butleri* (p. 619), Lado Enclave; *Rhodophoneus cruentus kordofanicus* (p. 633), Western Kordofan; *Tschagra senegala sudanensis* (p. 637), Mongalla, Sudan; *Cisticola erythrops zwaiensis* (p. 656); Lake Zwai, southern Abyssinia; *C. e. roseires* (p. 657), Roreires, Sennar; *Sylvietta rufescens transvaalensis* (p. 667), Rustenberg, Transvaal; *Eremomela flaviventris alexanderi* (p. 673) Bara, Kordofan; *Parisoma blanfordi somaliensis* (p. 707), Mundara, Somaliland; *Elminia longicauda loandae* (p. 712), N'Dalla Tando, North Angola; and *Hirundo puella unitatis* (p. 718), Pinetown, Natal.

This issue of 'The Ibis' is the 224th and completes the tenth series of this notable magazine. The editor believes that it compares favorably with the previous series, notwithstanding the unprecedented events that have

taken place throughout the world during the six years which it covers. In this opinion we heartily agree and offer our congratulations upon the success of his labors, the trying nature of which we appreciate only too well.

Bulletin of the British Ornithologists' Club. CCXXXVI. October 29, 1918.

Mr. Meade Waldo described the efforts for the protection of Kites in Wales.

Mr. P. F. Bunyard exhibited nest feathers and down of the Harlequin Duck from Iceland and remarked on the errors in published descriptions of them.

Major A. G. Sladen commented upon a collection of birds made in Palestine.

Mr. E. C. Stuart Baker described a new flycatcher from Siam as *Cyornis magnirostris caeruleifrons* (p. 8).

Mr. W. L. Sclater succeeded Lord Rothschild as chairman of the Club for the next five-year period.

British Birds. XII, No. 4. September, 1918.

Some Breeding Habits of the Sparrow Hawk. By J. H. Owen. (Concluded.)

Notes on the Autumn Migration at Odessa in 1917. By Maud D. Haviland.

The Behaviour and Mouth-coloration of Nestling-birds.—By W. R. Butterfield.—Argues for the protective value of these markings and of certain actions in frightening away enemies.

British Birds. XII, No. 5. October, 1918.

Nest Down in Some British Ducks. By Annie C. Jackson.—Relates to fourteen species.

The Moults and Sequence of Plumages of the British Waders. By Annie C. Jackson, Part VIII.—Covers the genus *Totanus* and one species of *Phalaropus*.

British Birds. XII, No. 6. November, 1918.

Notes and Observations on the Nesting of the Bullfinch. By Frances Pitt.—With several excellent photographs of the bird at the nest.

A List of Summer Birds Observed on the Outer Farne Islands. By Edward Miller.

Avicultural Magazine. IX, No. 10. August, 1918.

Wood-Swallows. A photograph of a pair feeding young.

In a review of Beebe's 'Tropical Wild Life,' it is rather amusing to see the violent opposition of the reviewer to the use of the word 'Oriole' for species of *Icteridæ*. Surely he must be aware that these birds have been known as 'Orioles' continuously since the very beginnings of American ornithological literature and are now called 'Orioles' by probably a far larger number of individuals than know the species of *Oriolus* by that name. We do not question the fact that the name belongs historically to

the latter, but it is as impossible to change such names today as it would be to change the names of several familiar objects of every-day use which, though quite different, are called by the same names on the two sides of the Atlantic. Curiously enough the word 'Flycatcher' passes without protest in the same review for the American tyrants, which though perfectly correct as the universal American term for the birds, is far worse than the case of 'Oriole,' since the two groups of 'Orioles' belong to the same suborder, while the two styles of 'Flycatcher' do not.

Avicultural Magazine. IX, No. 11. September, 1918.

How Birds of Paradise are Caught.

Twelve-wired Bird of Paradise. By Graham Renshaw.—Effect of captivity on coloration.

Avicultural Magazine. IX, No. 12. October, 1918.

Chinese Cage Birds. By K. H. Jones.

Kaleege and other Pheasants. By Frank Finn.

Ave Atque Vale: Villers-Bretonneaux — The total destruction of Lieut. Delacour's magnificent aviary in the fighting in France. There were 360 birds of 141 species contained in his collection.

The Emu. XVIII, Part I. July, 1918.

Australian Green-backed Finch (*Erythrura trichroa macgillivrayi*). By J. A. Kershaw. With colored plate.

Notes on Some Additions to the H. L. White Collection. By A. J. Campbell.

Birds of Lake Victoria and the Murray River for 100 Miles Down Stream. By Capt. S. A. White.—A very interesting account with a fully annotated list.

The Skeleton of the "Kea Parrot" of New Zealand (*Nestor notabilis*). By R. W. Shufeldt (see *antea* p. 131).

Queensland Notes. By D. LeSouef.—Another interesting narrative.

A Study of Australian Specimens of the Little Penguin (*Eudyptula minor*, Forster). By W. B. Alexander and Dr. Brooke Nicholls.—A careful study of sixty individuals which seems to show that the Australian birds are all referable to one race, *Eudyptula minor novaeollandiae*, instead of three as has been claimed by Mathews.

Description of a New Subspecies of *Hylacola pyrrhopygia* (Vig. & Horsf.). By F. E. Howe. *H. p. magna* (p. 59), Cobbora, N. S. W.

Nesting Notes from Moree. By F. C. Morse.—A diary of observations from September, 1917, to May 1918.

The Emu. XVIII, Part II. October, 1918.

Striated Grass Wren (*Amytornis striata*, Gould). With colored plate of mounted birds.

What are Australian Petrels? By Gregory M. Mathews.—Finds no recent records of thirteen of the species accredited to Australia by Gould. The editors question the advisability of rejecting the species from the Australian List on this account as they think that the birds' ranges may have

changed or they have for some reason become rarer. Incidentally Mr. Mathews endorses Murphy's recently described species of Albatross *Diomedea sanfordi* and also the subgenus *Rhothonia* Murphy, raising it to a genus.

Food of Diurnal Birds of Prey. By D. Le Souef. Shows that the Australian Eagles have been much maligned and do not do anything like the damage to lambs that they are credited with.

Bird Notes from the Boat Harbor (Tasmania) Region. By Miss J. A. Fletcher.

A Trip in Search of the Spotted Scrub-Wren (*Sericornis maculata*) and the Little Wattle-Bird (*Anellobia lunulata*). By C. L. E. Orton.

Cormorants: Are they Pests or Otherwise? By W. T. Forster.—Some evidence of their devouring food fishes.

The Jungle and the Snows. By Robert Hall.—An interesting account of a trip to India.

An Afternoon Among the Birds in the Baltimore (Md.) Woods, United States of America. By Edwin Ashby.—Mr. Ashby visited America last summer and it is very interesting to read his impressions of our avifauna and to learn what Australian species our familiar birds brought to mind.

Description of a New Subspecies of *Malurus cyanotus*. By H. L. White.—*K. c. diamantina* (p. 121), Diamantina River, W. Queensland.

Description of a New Subspecies of *Acanthiza nana*. By H. L. White.—*A. n. dawsoniana* (p. 122), Dawson River, C. Queensland.

Notes on Birds Seen on the Murray River, August, 1918. By W. B. Alexander.

Descriptions of two New Nests and Eggs. By Henry L. White.—*Malurus leucopterus edouardii* and *Eremiornis carteri*.

South Australian Ornithologist. III, Part 8. October, 1918.

Notes upon the Black-breasted Plover (*Zonifer tricolor*). By S. A. White.—With photographs of bird and nests.

A Sketch of the Life of Samuel White. By S. A. White.

Revue Française d'Ornithologie. X, No. 112-113. August-September, 1918. [In French.]

Some Defensive Reactions of Bird Colonies. By M. R. Deschiens.

Study of a Collection of Birds made by E. Wagner, in the Province of Misiones, Argentina. By A. Menegaux.

Some Data on 'Yellow Liver' in the Ostrich. By M. Aubry.

Ardea. VII, No. 3. August, 1918. [In Dutch.]

The Long-tailed Titmice (*Egithalus caudatus*). By G. Wolda.—A study of local and individual variations.

The Significance of the Crossing of Individuals of Different Linnæan Species in the Origin of our Domestic Forms. By H. N. Koorman.—Crossing of wild Species of Gallus.

Ornithological Articles in Other Journals.¹

Shufeldt, R. W. Our Big Colonial Eagle.—Terror of the Monkeys of the Philippines. (American Forestry, September, 1918).—On *Pithecopoga jeffreyi*, with illustration of the head and foot natural size.

Oberholser, H. C. The Scientific Name of the Passenger Pigeon. (Science, November 1, 1918).—*Columba canadensis* Linn. based on the female bird has page priority over *C. migratoria* of the same author, so that the proper name of the bird is *Ectopistes canadensis*.

Clarke, John M. Alleged Rediscovery of the Passenger Pigeon. (Science, November 1, 1918).—At Amsterdam, N. Y., October 1, 1918, seen by S. M. Rasmussen and two students near West Galway. Mr. Rasmussen had however seen the species but once before.

Thayer, Abbott H. Camouflage. (The Scientific Monthly, December, 1918). An interesting paper on this subject. The fact should not be lost sight of however that the mere possibility of placing a bird or animal in a position where its coloration helps to conceal it, in no sense proves that this is a habitual pose of the animal or that this has evolved its pattern of coloration (cf. p. 123 *antea*).

Taverner, P. A. The Gannets of Bonaventure Island. (The Ottawa Naturalist, May, 1918.)

Williams, M. Y. Brief Notes on the Fauna of Lambton County, Ont. (*Ibid.*).

Macnamara, Charles. The Chimney Swift. (*Ibid.*, September, 1918.) — An excellent article dealing especially with the study of a nest built on the wire guard to an open fireplace in a closed summer cottage. Illustrated by photographs.

Tothill, J. D. Diving Habit of the Spotted Sandpiper. (*Ibid.*)

Baxter, Evelyn V., and Rintoul, Leonora J. Report on Scottish Ornithology in 1917 Including Migration. (Scottish Naturalist, July-August, 1918.)

Baynes, Ernest Harold. A Ruffed Grouse as a Hostess. (Bull. Amer. Game Prot. Assn., July, 1918.)

McAtee, W. L. A Suggestion for Wild Duck Farmers. (*Ibid.*)

Quarles, E. A. The Wild Turkey at Woodmont (Md.) (*Ibid.*)—With full account of breeding the birds in captivity in order to keep preserves fully stocked.

Anderson, J. C. Further Notes on New Zealand Bird Song: Kapiti Island. (Trans. and Proc. New Zealand Inst., 1, pp. 282-295.)

Duerden, J. E. Absence of Xenia in Ostrich Eggs. (Jour. of Heredity IX, No. 6, pp. 243-245.) — South African Ostrich Hens mated with North

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

African cocks lay eggs characteristic of their own species with no sign of the male influence (Xenia) in the eggshells.

Mottram, J. C., and Green, F. W. E. Some Aspects of Animal Coloration from the Point of View of Color Vision. Pt. II. (Science Progress, XIII, No. 5.) — Worthy of careful study by students of protective coloration.

Collinge, W. E. The Preservation of Game Birds and its Relation to Agriculture. (*Ibid.*)

Kuroda, Nagamishi. Notes on Corean and Manchurian Birds. (Annot. Zool. Japonensis, IX, pt. IV.) [In English.] Annotated list of 204 specimens with a distributional table of all species known from these countries.

Wilson, F. Erasmus. An Ornithological Trip to the Nhill District. (Victorian Naturalist, XXXV, pp. 93-100.)

Quijada, Bernardino. Birds of Chile and a Discussion of their Spanish Names. (Bol. del Mus. Nac.—Santiago. X, pp. 5-27.) — Twenty-eight species.

Oberholser, H. C. Mutanda Ornithologica, IV. (Proc. Biol. Soc. Wash. XXXI, pp. 125-126.)

Owing to shifting the generic name *Tanagra* to the Euphonias, the following names become preoccupied and substitutes are here proposed.

Euphonia vittata Sci. becomes *Tanagra catacticta* nom. nov. (p. 125); *E. aurea pileata* becomes *T. a. cynophora* n. n. (p. 126); *E. violacea magna* becomes *T. v. pampolla* n. n. (p. 126); *E. lanirostris peruviana* becomes *T. l. zopholega*, n. n. (p. 126) and *E. olivacea* becomes *T. minuta* Cab.

Baker, E. C. Stuart. The Game Birds of India, Burma and Ceylon. (Jour. Bombay Nat. Hist. Soc., XXV, No. 4.) — Genera *Pucrasia* and *Chrysolophus*.

Whistler, H. Notes on the Birds of Ambala District, Punjab. (*Ibid.*) — Annotated list, to be continued.

Publications Received.—**Beebe, William.** A Monograph of the Pheasants. Volume I. Published under the Auspices of the N. Y. Zoölogical Society by Witherby & Co., London, 1918. Price \$62.50 per volume. Royal quarto.

Beebe, William. Jungle Peace. New York, Henry Holt and Company.. 1918. Price, \$1.75 net.

Chapman, Frank M. Our Winter Birds. New York, D. Appleton & Company. 12 mo. pp. 1-180, 1918. Price, \$1.25 net. By mail, \$1.35.

Lawler, George A., and Earnshaw, Frank L. Game Laws for 1918.. Farmers' Bulletin 1010 United States Department of Agriculture. October, 1918.

Miller, Leo E. In the Wilds of South America. New York. Charles Scribners' Sons, 8vo, pp. 1-424 1918. Price, \$4.50.

National Association of Audubon Societies. Fourteenth Annual Report (Bird-Lore XX, No. 6.)

Riley, J. H. Annotated Catalogue of a Collection of Birds made by

Mr. Copley Amory, Jr., in Northeastern Siberia. (Proc. U. S. Nat. Mus. Vol. 54, pp. 607-626.)

Slater, William L. Aves. (Zoölogical Record, Vol. LIII, 1916.) Price six shillings. Zoöl. Soc. of London, Regent's Park, London, N. W., August, 1918.

Shufeldt, R. W. (1) The Skeleton of the "Kea Parrot" of New Zealand (*Nestor notabilis*) (The Emu, XVIII, Part I, July, 1918.) (2) On the Study of Sex (Alienist and Neurologist, Vol. XXXIX, No. 2.) (3) Our Big Colonial Eagle (American Forestry, Vol. 24, No. 297, September, 1918.)

Taverner, P. A. (1) Addenda to the Birds of Jasper Park, Alberta. (Canadian Alpine Journal, Vol. IX, 1918.) (2) The Hawks of the Canadian Prairie Provinces in their Relation to Agriculture. (Canada Geological Survey, Museum Bulletin No. 28.) Biological Series, No. 7, August, 1918,

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CORRESPONDENCE

Maggot Infested Birds.

EDITOR OF 'THE AUK':

Since beginning the operating of my hospital for the care and treatment of injured wild birds, some three or four years ago, my attention has frequently been called to the number of birds suffering from the presence of maggots in some of the external parts of the body. The number of avian sufferers has increased so greatly this season over previous years, and there seems to be so little known about the fly producing these worms, that I feel impelled to present my observations to the readers of 'The Auk' in the hopes that a complete history of the fly may be furnished by some one.

The victims seem to be confined almost exclusively to the smaller birds, Yellow Warblers, Goldfinches, House Finches, Horned Larks, Vireos, and the House Sparrows in particular, and are fledglings, scarcely an adult coming to the hospital. A few Western Meadowlarks have been brought to me, two specimens — fledglings — yielding one hundred worms, their bodies presenting the appearance of having been struck by a load of shot. The largest number of these worm-infested creatures come from the homes of the House Sparrow. A friend reported that a litter of infant pigs were invaded by the fly and three of them died from the presence of the maggots burrowing into the brain through the eyes. It is reported also that a bird-devouring cat fell victim to the worms.

The favorite location selected by the fly to deposit its eggs and young,— for the young evidently hatches in the act of deposit in the soft tissues of the bird and immediately burrows beneath the surface,— is on the head, near or in the corner of the eyes, about the neck and upper part of the wings,

but the legs have been the only parts not invaded so far as my observation goes. The maggot eats a burrow or chimney into the flesh of its victim, remaining stationary and feeding upon the fluids of the helpless messmate until death releases it, when the horrid thing deserts the lifeless carcass and if not destroyed buries itself in the earth. Very little seems to be known about this strange fly, so far as my inquiries have extended, but the old-timers call it the "screw fly," and regard it with great disfavor.

A number of years ago a lady brought her six-month-old infant to me for examination and relief, stating that whilst wheeling her baby through the park it suddenly cried out as though in pain, and she discovered one of these screw flies dashing about over the child's face. An investigation revealed some six or eight microscopic larvæ busily burrowing into the tender skin of the helpless victim. And this was within half an hour after the attack of the fly.

In order to get some reliable data in regard to the genesis of this maggot, I secured a number of them and bedded them in earth, confining the receptacle in which they were to pass through their mysterious transformation in a box covered with close-woven wire netting which effectually prohibited the escape of the fly.

Within a few days' time the larvæ were transformed into the chrysalis state, and in about three weeks two flies appeared, smaller than the ordinary green fly but resembling it in every way. These flies died before I could carry out further experiments, but other hatchings I trust will give me the desired opportunity of watching them sting a live bird.

Dr. J. Bequaert of the American Museum of Natural History, to whom the dead flies were submitted, reports as follows:

"The flies obtained by Dr. Arnold from bird-infesting maggots belong to the genus *Protocalliphora* of the Calliphorinæ or bluebottle flies. In Europe and North America the larvæ of two very closely allied species of *Protocalliphora* are known to parasitize birds. The species reared by Dr. Arnold from skin-boring maggots I consider to be the true *Protocalliphora azurea* (Fallen). In the Eastern United States (Pennsylvania, New York) and also in Europe there is an apparently different species, *Protocalliphora sordida* (Zetterstedt), whose maggots live among the feathers of young or even adult birds, sucking blood at intervals without boring into the skin. The life history and distribution of these two bird parasites are not yet completely known, and I should be very grateful for further information on the subject, especially if accompanied by maggots or flies."

Fewer maggot infested birds were brought to the hospital the past summer than during the previous few years.

Careful experiments proved positively that the fly would not deposit its eggs or larvæ in the dead carcasses of birds.

W. W. ARNOLD, M. D.

Rooms 5 and 6, First Nat. Bank Building,
Colorado Springs, Colo.

Evolution of Bird Song.

EDITOR OF 'THE AUK':

I was much interested in the article in the October number of 'The Auk,' on "Sexual Selection and Bird Song," by Chauncey J. Hawkins. Mr. Hawkins' conclusions are interesting, and perhaps entirely correct, but there are one or two weak points in his arguments, that I should like to point out. I have also some observations of my own, which it seems to me, point to the opposite conclusion, that sexual selection is the primary cause of the evolution of bird song.

Bird voice and bird song are two different things, the evolutions of which have not necessarily been brought about in the same manner. Yet Mr. Hawkins, in portions of his paper relating to his own observations, does not carefully distinguish between voice and song. His remarks concerning the calls of Crows and Jays will not apply to a discussion of song. His observations of Robins and Goldfinches in winter are not so stated as to make it clear whether the birds were really singing or merely indulging in rather musical call-notes. No one supposes that bird-voice, call notes, alarm notes or notes of female to young have been evolved by sexual selection. But when it comes to the true song of the male bird, there seems to be, in my opinion, good reason to suppose that sexual selection had at least some part in its evolution.

In order to avoid mistaken ideas it would be well to have a definition of bird song. I am not sufficiently well acquainted with the literature of this subject to know whether anyone has attempted such a definition, so I will give what I should consider a proper definition in my own words. *Bird song is a vocal performance produced by the male bird during a definite season of the year, that season including the period of courtship, mating and nesting.* Such a definition would imply that a vocal performance in which the female indulges regularly is not a song. Similarly a vocal performance not confined to a definite season of the year is not a song. I am aware that there are cases where an individual female has sung the song of the male. I have met with a single instance of this sort in my own experience in the case of the Slate-colored Fox Sparrow (*Passerella iliaca schistacea*) (Condor XII, 80). I believe that such instances are merely those of individuals showing a tendency toward masculine traits, and that such things may occur in any singing species. Such isolated facts do not hurt the definition or make it less plain. In the same manner a single individual might sing outside the regular song period of its species, or might prolong its nesting a little beyond the limits of its period of song. So long as such occurrences are not general the definition of song remains clear. I doubt if anyone could find an authentic instance however of two individuals of a singing species which mated and began nesting when the male was not in full song.

It is to be noted that musical quality is not part of the definition of song. Many bird calls are exceedingly musical without being songs. Such is the

twitter of a winter flock of Tree Sparrows (*Spizella monticola*). On the other hand some true songs, according to the definition, are sadly unmusical to human ears at least. The efforts of the male Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) are a good example.

One point about bird song which seems to have been more or less neglected by most field observers, is that in many species the song differs from the ordinary type during the short period of courtship. This difference may be in the loudness or form of the song or in performances connected with it. Thus the Song Sparrow (*Melospiza melodia*) and Yellowthroat (*Geothlypis trichas*) rise in sudden ecstasy of flight song, and prolong the vocal performance to several seconds longer than its ordinary duration. The Meadowlark (*Sturnella magna*) also sings a flight song, but one absolutely different from the ordinary song. It is a long-continued jumble of short quick notes and quite closely resembles the flight-song of the Bobolink (*Dolichonyx oryzivorus*). The Robin (*Planesticus migratorius*), in the late days of April when mating is in progress, may be found singing with its bill closed, the notes hardly audible for more than a hundred feet. At such times its mate is nearly always to be found in the same tree, evidently listening with pleasure to this whispered song, which is apparently sung for its benefit only. This mating song of the Robin is a common occurrence in the life of one of our most abundant birds. I have noted it many times in many localities in the past fifteen years. It is common to both eastern and western subspecies, yet most ornithologists seem to have overlooked it entirely, for I have never seen mention of it in print, nor do I know any ornithological friend who has observed it independently.

This fact that many birds have two songs, an ordinary song and a mating song, is significant in solving the problem of the origin of song. The ordinary song is evidently not sung from sexual impulses, but is simply an outburst of vocal sounds expressing great vigor and joy of living. Any observer will note that this song is more commonly influenced by time of day and weather conditions than by the presence of the bird's mate. But the mating song, on the other hand, seems to be caused directly by sexual impulses. If we would know the primary cause of bird song in general, then the question to be solved is which of these forms of song is the more ancient. Did birds first begin to sing simply from joy of living, or were the first songs induced by the period of courtship, and the ordinary song evolved later?

One observation which seems to give some evidence pointing to the greater antiquity of the mating song is furnished by the Meadowlarks (*Sturnella magna* and *S. neglecta*). Both the Eastern and Western Meadowlarks have ordinary and mating songs, the former short and most commonly rendered from a perch, the latter long-continued and always sung on the wing, frequently in pursuit of the mate. The great differences in the ordinary songs of these two species is too well known to need comment, but the similarity of their mating songs is less well known. In fact I have never seen these flight songs mentioned in print by any

writer. The point is that save for certain introductory notes rendered by the western bird before it leaves its perch for the flight, the mating songs of the two species are almost identical. This is the more interesting since neither the call-notes nor alarm notes of the two species are at all alike. This then seems to me good evidence that before these species became separated, their common ancestor had a mating song, one which may have been derived even more anciently from a common ancestor with the Bobolink. Then geographical conditions separated the birds and the ordinary songs were slowly evolved, the eastern birds producing a high piercing whistle, while the western ones evolved a rich, loud thrush-like warble and this leads me to believe that the first songs of birds were mating songs, evolved by sexual selection and limited to the period of courtship only.

ARETAS A. SAUNDERS.

Norwalk, Conn., Nov. 26, 1918.

Australia's Effort to Save her Bird Fauna.

EDITOR OF 'THE AUK':

In my last October Australian mail I received a most interesting letter from my friend Captain S. A. White, of Fulham, South Australia, where he holds the Local State Secretaryship for the Royal Australasian Ornithologists' Union. Captain White is one of Australia's best known ornithologists and general naturalists. He has conducted upwards of a dozen scientific expeditions into the unexplored wilds of Southern Australia, where he has discovered unknown races of natives, collected many new forms of birds, plants, and other specimens — and, finally, published some six or eight booklets, illustrated by fine halftones, treating of these several expeditions.

Among his other experiences Captain White has come to realize the fact that many species of Australian birds are on the very verge of extermination; some have already gone forever, while a whole host more are becoming scarce. This pitiable state of affairs applies also to the flora over similar areas.

Now Captain White has recently taken hold of this matter with great force and in 'The Register' of Adelaide invited the attention of the Commonwealth to this serious state of things, especially to the rapid disappearance of many of Australia's most beautiful and interesting species of birds — and we all know what a magnificent avifauna she has.

It would appear that the Government has repeatedly broken its promises to set aside "Flinders Chase" on Kangaroo Island for this purpose, which Captain White points out is an ideal place for the purpose. In the course of his remarks in 'The Register' for October 9, 1918, he says "News came to hand by the last American mail that another 12,000 acres of woodland, prairie and watercourse has been added to the great forest reserves in the

county of Illinois, and more than 30 miles of shore line of Lake Michigan has been set aside as a sanctuary for wild animals and birds. This news comes when we here in South Australia are fighting hard to show the 'powers that be' the necessity of setting aside an area of poor country on Kangaroo Island for the same purpose, and shame be it to South Australia that there are no such parks or reserves in this State as there are in America and even approaching those now existing in other States of the Commonwealth."

Few countries in the world possess the bird fauna that Southern Australia has, as any complete ornithological work with colored plates of all the species will demonstrate. Even such an admirable little work as 'An Australian Bird Book' by Dr. J. A. Leach, with its plain and colored figures, gives a fine realization of the extraordinary avifauna of that great island continent. We find no Humming Birds, Vultures or Woodpeckers, to be sure, but an enormous array of nearly 400 species of everything else known to the Class Aves, including such archaic types as the Emu, Lyrebird, Moundbuilders, and so on. A very large percentage of the forms are of wonderfully varied and brilliant plumage, especially among the Kingfishers, Rollers, Cockatoos, Parrots, Chats, Regents, Honey-eaters, Diamond Birds, and many others.

It is greatly to be hoped that the government will give heed to such earnest appeals to it as have been made by such distinguished and far-seeing ornithologists as Captain White, Dr. Leach and not a few others among Australian scientists and sincere lovers of all that nature offers in that grand old sunny continent of the Southern Hemisphere.

R. W. SHUFELDT.

Washington, D. C., 28th November, 1918.

NOTES AND NEWS.

In a discussion of nomenclature in 'The Auk' for October, 1918, p. 508, the writer referred to a "list of *proposed* changes and additions to the 'Check List' compiled by Dr. H. C. Oberholser and embodying the compiler's opinions upon certain of the cases."

This sentence seems to have been interpreted by some readers as a reflection upon Dr. Oberholser by charging him with inserting in a list of "proposed changes" a personal opinion as to the advisability of the changes. No such criticism was intended and while the writer sees no reason why Dr. Oberholser should not have added such opinion, nevertheless, he did not do so, and the writer was misled by certain opinions already published elsewhere and quoted in these lists.

Our whole object was to emphasize the fact that these lists did not have the authority of the A. O. U. They simply represent the present status of nomenclature if all the proposed changes not subsequently rejected by others were accepted.

The use of the words "becomes" and "will therefore stand" have misled others into the view that the final action had been taken, whereas Dr. Oberholser simply means "becomes" or "will therefore stand" *provided the proposed change is accepted*.

It has proved impracticable to hold meetings of the Committee for the past several years and in order to have all *proposed* changes conveniently accessible, Dr. Oberholser has, at the request of the chairman, prepared these annual lists for final action when a new Check-List is prepared.—W. S.

WALTER FREEMAN McMAHON, an Associate of the American Ornithologists' Union, was killed in action, in France, August 28, 1918.

Mr. McMahon was born in Chelsea, Massachusetts, June 17, 1889. He attended the Shurtleff School at Chelsea and later the Lewis School at Roxbury. Subsequently he took a course in the School of Fine Arts, and studied zoölogy at Harvard University. He early developed an intense interest in the study of birds and for a time lectured extensively at various places in Massachusetts. He conducted bird exhibitions in Tremont Temple and the Mechanics' Building in Boston. For two years he was secretary to Edward H. Forbush, State Ornithologist of Massachusetts, during which time he conducted much of the correspondence of the office and drew many of the illustrations used in Mr. Forbush's bulletins. He served a year as secretary of the Massachusetts Game Protective Association with an office in Boston. In January, 1917, he was called to the office of the National Association of Audubon Societies in New York, where in a short time he became Chief Clerk. The bird walks he conducted in Central Park quickly became well known, and many bird-lovers in the City thus made his acquaintance. He was a member of the Linnæan Society and regularly attended its meetings. He left the Association on March 15, 1918, to enter the Army and in less than sixty days sailed for France. He saw more than a month's service in the front lines and as "scout" for his platoon was engaged in a number of dangerous enterprises. It was while undertaking a desperate mission in this capacity that he met his death from the bullet of a German sniper while crossing No-man's Land. Walter McMahon was not only a forceful character, but he possessed, to an unusual degree, an innate refinement and a quiet courtesy that particularly endeared him to all with whom he was associated.—T. G. P.

DOUGLAS CLIFFORD MABBOTT, at the time a private in the 79th Company, 6th Regiment of the United States Marine Corps, was killed in action to the north of Chateau Thierry, France, September 15, 1918. Mabbott has been an Associate of the American Ornithologists' Union since 1916

and a member of the United States Biological Survey since 1915. He was born at Arena, Iowa County, Wisconsin, March 12, 1893, and was educated in the public schools of that state, graduating from the High School at Baraboo. While in Washington, D. C., in order further to fit himself for his official work, he took a special course in zoölogy at George Washington University. He was self-taught in natural history, however, and before coming to the Biological Survey creditably passed two of its examinations, one of which required special knowledge of mammals, the other of birds. In the Biological Survey, he was an assistant in economic ornithology, and was especially trained to investigate the food habits of wild ducks. He made good progress in this work and left with the Survey, ready for publication, three manuscripts treating the food habits respectively of the three species of Teals, of the Gadwall and Widgeon, and of the Pintail and Wood-duck. In the summer of 1917 Mabbott helped to make a survey of the resources in food for wild fowl of the lakes of North Dakota. He served in the National Guard of the District of Columbia in 1916 when trouble with Mexico threatened, and was honorably discharged. He enlisted for service in the present war in February 1918, as soon as he could complete reports on the North Dakota work and on the groups of wild ducks studied. He received ten weeks' training at Paris Island, South Carolina, and was sent at once to France. He had a rifle blown from his hand by a bursting shell, received hospital treatment for shell shock and had only recently recovered and resumed his place in the ranks at the time he was killed. His last words exhorted his comrades to hold the ground gained. Mabbott enlisted in the Marines to get quick action and he got it, and he will ever be numbered among the heroic band that stopped the German drive on Paris. In his office work Mabbott showed tireless application and he had become very efficient in his special line. Out of doors he was a splendid companion with a keen eye and ear for nature's wonders. While of an independent nature and original turn of mind, in character he was a most likable, straightforward and wholesome boy. To the writer of these lines he was not only an irreplaceable assistant and successor in an especially valued line of work, but a sincere and manly young friend whose loss leaves a definite void.—W. L. M.

PROF. DAVID ERNEST LANTZ, Assistant Biologist in the Biological Survey since 1904, and an Associate of the American Ornithologists' Union since 1885, died of pneumonia at his home in Washington, D. C., Oct. 7, 1918, after an illness of only a week. He was born at Thompsonstown, Pa., Mar. 1, 1855, and at the time of his death was in his 64th year.

After graduating at the State Normal School at Bloomsburg, Pa., Prof. Lantz became principal of schools at Mifflintown, Pa., a position which he occupied two years. In 1878 he moved to Kansas where during a residence of a quarter of a century he became widely known in educational and scientific circles. He served as superintendent of schools at Manhattan, professor of mathematics in the State Agricultural College for

fourteen years, and later as principal of the Dickinson County High School, and field agent of the Kansas Agricultural Experiment Station.

In 1904 he received an appointment in the U. S. Department of Agriculture and has since devoted his attention mainly to investigations on mammals of economic importance. He published extensively on economic mammalogy and was the author of twenty or more Farmers' bulletins and a number of other reports and special papers.

During his residence in Kansas he published about thirty-five papers and short notes on birds and added two species to the state list, the Purple Gallinule in 1893 and the Roseate Spoonbill in 1900. His most important ornithological contributions were his 'List of Birds in the Goss Collection' and his 'Review of Kansas Ornithology.' The latter paper contained a unique feature in the 'Historical List' showing the date when each species was first recorded from the state.

Prof. Lantz was widely known in scientific circles in Kansas and in Washington. He was a life member of the Kansas State Horticultural Society, the Kansas Academy of Science, and served as secretary and president of the Academy of Science. He was a member of the Biological Society of Washington and for five years filled the office of recording secretary. When the 'Ten Year Index of The Auk' was in course of preparation he served on the committee and took an active part in the work.

He is survived by his wife, Mrs. Clara Deen Lantz, and two daughters. Mrs. Frank S. Evans of Baltimore, Md., and Mrs. J. N. Simmons of Victor, Colo.—T. S. P.

CHECK LISTS.—In view of the invitation extended by the B. O. U. to the A. O. U. to coöperate in the preparation of a series of check lists of the birds of the principal zoölogical regions of the world(see 'The Auk,' Oct. 1918, p. 509), it is interesting to recall what has already been done by the A. O. U., the B. O. U., and the R. A. O. U. and some of their members in the publication of check lists.

The A. O. U. has published an official 'Check-List of North American Birds' including the species and subspecies which occur north of the Gulf of Mexico and the Rio Grande and also on the peninsula of Lower California. The first edition appeared in 1886 and two revised editions have since been issued, one in 1895 and the last in 1910. Before the organization of the A. O. U. several check lists of North American birds were published by individual authors who later became members of the Union and took part in the preparation of its first Check-List. Of these the first was published by Baird in 1858, the second by Coues in 1873 with an elaborately annotated revised edition in 1882, and the third by Ridgway in 1881. The check lists of Baird and Ridgway were issued by the Smithsonian Institution and National Museum and those of Coues were private publications.

The official check list of the British Ornithologists' Union has been limited to two editions of the 'List of British Birds,' one of which appeared

in 1883 and the other a revised edition¹ in 1915. In 1912 a 'Hand-List of British Birds'² was published independently by Hartert, Jourdain, Ticehurst, and Witherby, all of whom were members of the B. O. U. Several earlier lists have been published covering the same ground, among which the more important are the 'Zoölogist List' of 1870, Wharton's List of 1877, Col. Irby's 'Key List' of 1892, and Seebohm's 'Geographic Distribution of British Birds,' 1893.

The Royal Australasian Ornithologists' Union in 1913 published the result of ten years' work of its committee in the form of an 'Official Check-List of the Birds of Australia.'³ In addition to this there are at least three other check lists all published by Gregory M. Mathews during the last decade, viz. a 'Hand-list of the Birds of Australasia,' 1908, in 'The Emu,' based on Sharpe's 'Hand List'; a 'Reference-list to the Birds of Australia' in 'Novitates Zoölogicae,' XVIII, 1912; and a 'List of the Birds of Australia,' 1913. Australia is thus unusually well supplied with recent lists of its birds.

Of lists of birds of other regions prepared by members of the Ornithologists' Unions several deserve mention in this connection. On the birds of America Selater and Salvin's 'Nomenclator Avium Neotropicalium,' 1873, as its name indicates, includes the birds of the Neotropical region; Brabourne and Chubb's 'Birds of South America' appeared in 1912;⁴ while Cory has begun the publication of an extensive 'Catalogue of Birds of the Americas,'⁵ covering the region from Patagonia to the North Pole—of this the second volume (the only one thus far issued) was published in 1918. For Europe, we have among others the 'List of the Birds of Europe' by J. H. Blasius, reprinted from the German in 1862, and Dresser's 'List of European Birds' which bears the date of 1881. For the region comprising the islands of the Pacific Ocean Wilesworth's 'Aves Polynesiæ,' 1891, is the most comprehensive list.

Among check lists of the birds of the world are G. R. Gray's⁶ 'Hand-List of Genera and Species of Birds,' in three parts, 1869-71; Boucard's 'Catalogus Avium,' 1876; and Sharpe's 'Hand-List of the Genera and Species of Birds' in five volumes, 1899-1909.

This brief enumeration of only a few of the more important lists of birds of extensive regions includes three check lists that are world-wide in scope, one covering North and South America, seven North America, two South America, two Europe, seven the British Isles, four Australia, and one Polynesia. Some of these lists now require revision and there is room for greater uniformity of treatment of the subject and more catalogues of birds of natural zoölogical areas such as Australia, the Neotropical

¹ For a review see *The Auk*, XXXII, p. 243, 1915.

² For a review see *The Auk*, XXIX, p. 407, 1912.

³ For a review see *The Auk*, XXX, p. 445, 1913.

⁴ For a review see *The Auk*, XXX, p. 286, 1913.

⁵ For a review see *The Auk*, XXXV, p. 365, 1918.

⁶ G. R. Gray was not a member of the B. O. U.

Region, and Polynesia. To meet these requirements is in part the object of the proposed 'Systema Avium.'—T. S. P.

AN interesting collection of paintings of extinct birds or those in danger of extinction is being made by the New York Zoölogical Society. The three paintings now exhibited in the Administration Building in the Zoölogical Park are the work of Robert Bruce Horsfall and include the Great Auk, Pallas' Cormorant, and the California Condor.

ACCORDING to 'The Emu' efforts are now being made to raise a sufficient fund to purchase and transfer from England to Australia the great collection of Australian birds belonging to Gregory M. Mathews. This is the first large collection of birds which has been offered for sale since the collection of the late Count Hans von Berlepsch was sold a few years ago. The latter collection was especially rich in South American species.

DR. T. S. PALMER has prepared an interesting historical account of the American Ornithologists' Union, with portraits of the founders and some leading members, which appeared in 'The American Museum Journal' (XVIII, No. 6, November, 1918). The object was to arouse interest in and to advertise the society in the hope of securing additional members. A few copies are available should members desire to secure them from him.

DURING the year 1918 the Union gained 17 life members as follows: Three Fellows — Eugene P. Bicknell, Richard C. McGregor, and T. S. Palmer; two Members — F. H. Kennard and Geo. Shiras 3d; and 12 Associates — Franklin Brandreth, Mrs. Edmund Bridge, Dudley B. Fay, Harry Harris, Harold Herrick, John B. Henderson, Mrs. Ella M. O. Marshall, Miss Elizabeth D. Palmer, Edward L. Parker, L. H. Vandergrift, Gordon B. Wellman and William P. Wharton.

WE learn with much regret of the retirement of Mr. W. R. Ogilvie-Grant from his post in the British Museum (Natural History), on account of ill health. According to 'The Ibis,' Mr. Grant became connected with the museum in 1882 and began his work in the Bird Room in 1885, becoming Assistant Keeper of the Zoölogical Department in 1913. While serving in outer defences of London, in August 1916, in the 1st County of London Volunteer Regiment, he received a sunstroke from the effects of which he has suffered ever since. By absolute rest in the quiet of the country, it is hoped he may soon regain his health.

BEGINNING with the April 1918 issue 'The Ottawa Naturalist' has appeared in a much improved form, with a larger page and new cover. It was established in 1887 by the Ottawa Field Naturalists' Club and is therefore one of the oldest natural history periodicals in North America. Judging by the recent issues the improvement extends also to the subject matter and it bids fair to hold and strengthen its honorable place in scientific literature.

THE CHICAGO ORNITHOLOGICAL SOCIETY founded in December, 1912, by Dr. R. M. Strong continues as an active organization, meeting on the second Tuesday of each month. The officers for the current year are Edward R. Ford, President; Dr. Alfred Lewy, First Vice President; Prof. C. W. G. Eifrig, Second Vice President; Miss Marian Fairman, Secretary-Treasurer, address 4744 Kenwood Ave., Chicago, Ill.

AN interesting exhibit of pictures illustrating protective coloration in nature and concerned with the origin of camouflage in war, by Abbott H. and Gerald H. Thayer, was held in the Corcoran Gallery of Art, Washington, D. C., October 26 to November 17, 1918.

EARLY in 1920 the Nuttall Ornithological Club proposes to issue a supplement to its Memoir III, 'The Birds of Essex County' (Massachusetts) by Charles Wendell Townsend, M. D., which was published in 1905.

The author will be glad to receive any notes of interest on the birds of this county, including earlier or later dates than those in the original memoir, in order to make the supplement as complete and valuable as possible. These notes should reach him on or before November 1, 1918. Address 98 Pinckney St., Boston, Mass.

A LETTER of Mr. M. Rasmusson describing the presence of a flock of supposed Wild Pigeons in Saratoga County, N. Y., October 1, 1918, has been given wide publicity by the N. Y. State Museum at Albany and was published in 'Science' and doubtless elsewhere. While it is of course impossible to satisfactorily verify such observations, attention might be called to the statement of the observer that he had seen the bird but once before, which was about twenty years ago near Ithaca. Even that observation was a very late one if the date is correctly given.

Another observation of alleged Passenger Pigeons by John M. Crampton, Supt. of the Conn. State Board of Fisheries and Game, in May, 1918, at Southington, Conn., was published in 'The Conservationist' (Albany, N. Y.), August, 1918. It seems more convincing than the other, as Mr. Crampton was familiar with the birds from boyhood, but again positive proof is impossible, and we have to consider several positive records of men who had killed hundreds of pigeons, mistaking doves for pigeons in later years!

CALLED TO THE COLORS.—During the past year lists of the members of the A. O. U. in military and naval service have been published in each number of 'The Auk' as the information was received. It now seems desirable to present in one place the names of all these members in order to show the active part taken by the American Ornithologists' Union in the great world war.

The following list has been corrected to Nov. 11, 1918, the date of the signing of the armistice. It is still incomplete and in some cases (as shown by months in parentheses), the latest information available is now out of

date. Future editions of the list are likely to consist mainly of corrections which should be sent to the Secretary so that the service record of the Union may be made as complete as possible.

Killed in Action.

DUNLOP, ERIC BROOKE, Winnipeg, Man., Mar. 19, 1917.
McMAHON, WALTER FREEMAN, New York City, Aug. 28, 1918.
MABBOTT, DOUGLAS CLIFFORD, Washington, D. C., Sept. 15, 1918.

ADAMS, DR. Z. B., Brookline, Mass. Am. Exped. Forces, in France.
ANDERSON, ERNEST MELVILLE, Esquimalt, B. C. Private A Co.,
R. C. R., B. C. Special Service Unit, Quebec.
ANTHONY, HAROLD ELMER, New York City. Capt. 309th Field
Artillery, Camp Lewis, American Lake, Wash.
BABCOCK, DR. H. L., Dedham, Mass. Lieut. Med. Reserve Corps.
BAKER, JOHN HOPKINSON, Dayton, O. Lieut. Aviation Corps,
Am. Exped. Forces, in France.
BERGTOLD, DR. WILLIAM HARRY, Denver, Colo. Major Medical
Corps, U. S. General Hospital No. 21, Denver, Colo.
BOYLE, HOWARTH STANLEY, New York City. Ph. M. 3, U. S. Naval
Base Hospital Unit 1, Am. Exped. Forces, in France.
BRADLEE, THOMAS STEVENSON, Boston, Mass. Major, Asst. to Dept.
Quartermaster in charge of Personnel & Transportation Division,
Governor's Island, N. Y.
BRITTEN, DR. GEORGE SIDNEY, Syracuse, N. Y. Captain Medical
Corps, Am. Exped. Forces, in France.
BROOKS, ALLAN [CYRIL], Okanagan Landing, B. C. Major 11th
Canadian Infantry Brigade H. Q., Brit. Exped. Forces, in France.
BROOKS, WINTHROP SPRAGUE, Boston, Mass. Ensign in the Navy
(Retired).
BURLEIGH, THOMAS D., Pittsburgh, Pa. 20th Engineers (Forest),
in France.
CAHN, ALVIN ROBERT, Chicago, Ill. Laboratory work in Base Hos-
pital, in France.
CHAPIN, JAMES PAUL, New York City. 1st Lieut., care of R. R. &
C., A. P. O. No. 757, Am. Exped. Forces, in France.
CHAPMAN, DR. FRANK MICHLE, New York City. Red Cross Com-
missioner, South America.
CHAPMAN, MRS. FRANK MICHLE, New York City. In Red Cross
work, South America.
CROSBY, MAUNSELL SHIEFFELIN, Rhinebeck, N. Y. Captain Quarter-
master Corps, Am. Exped. Forces, in France.

- DECKER, HAROLD KENNETH, New Brighton, N. Y. In Naval Service, 66 Martin St., Cambridge, Mass.
- DERBY, DR. RICHARD, New York City. Major, Medical Corps, Am. Exped. Forces, in France.
- DICE, LEE RAYMOND, Washington, D. C. Private Yale Army Laboratory School, New Haven, Conn.
- EASTMAN, FRANCIS B. Major 344th Infantry, Camp Grant, Rockford, Ill. (Mar., 1918).
- FAY, SAMUEL PRESCOTT, Boston, Mass., 1st Lieut., Camp Devens, Ayer, Mass. (Mar. 1918).
- FOWLER, FREDERICK HALL, Palo Alto, Calif. Captain of Engineers, Office Chief of Engineers, Washington, D. C.
- FRY, REV. HENRY JACOB, Montclair, N. J. Chaplain, U. S. Navy.
- GOLDMAN, EDWARD ALFONSO, Washington, D. C., Major Sanitary Corps, A. P. O. No. 721, Am. Exped. Forces, in France.
- GOODRICH, MISS JULIET THEODOSIA, Chicago, Ill. In war work in France.
- GRISCOM, LUDLOW, New York City. 2d Lieut., Service des Accrédités, Credit-Lyonnnais, Paris, France.
- HAGAR, JOSEPH ARCHIBALD, Newtonville, Mass. 2d Lieut. Infantry, Camp Devens, Ayer, Mass. (Mar. 1918).
- HALL, FRANK GREGORY. Signal Corps School of Meteorology, 32d Service Co., College Station, Texas.
- HARPER, FRANCIS, Washington, D. C. 1st Lieut., Sanitary Corps, Am. Exped. Forces, in France.
- HOLT ERNEST GOLSAN, Washington, D. C. 2d Lieut. Infantry, 10th Co., 3rd Battalion, 152d Depot Brigade, Camp Upton, N. Y.
- KITTREDGE, JOSEPH JR., Missoula, Mont. 1st Lieut. 10th Engineers (Forest) Am. Exped. Forces, in France.
- LAING, HAMILTON MACK, Portland, Ore. Instructional Section, School of Aerial Gunnery, Beamsville, Ont.
- LEISTER, CLAUDE WILLARD, Ithaca, N. Y. Private Hdq. Co., 110th Infantry, Am. Exped. Forces, in France.
- LEWIS, HARRISON FLINT, Yarmouth, N. S. District Auditor, M. D., No. 5, P. O. Box No. 6, Quebec, P. Q.
- LINCOLN, FREDERICK CHARLES, Denver, Colo. Acting Sergeant, Calif.
- Pigeon Section 293d Aero Squadron, March Field, Riverside.
- LORING, JOHN ALDEN, Owego, N. Y. 1st Lieut. of Ordnance, Texas.
- MAPLES, JAMES COMLY, Port Chester, N. Y. Seaman in the Navy Section Base No. 1, Third District, New Haven, Conn.
- MARX, EDWARD J. F., Easton, Pa. Capt. Battery B, 16th Field Artillery, Camp Greene, N. C. (Mar. 1918).
- MATTERN, EDWIN S. Am. Exped. Forces, in France.
- MAYFIELD, DR. GEORGE R., Nashville, Tenn. Am. Exped. Forces, in France.

- McCook, PHILIP JAMES, New York City. Major, Adjutant 9th Brigade, Am. Exped. Forces, in France. (Wounded in action Nov. 6, 1918. Convalescing in Base Hospital No. 6, in Bordeaux.)
- METCALF, FRANKLIN POST. Lieut. Signal Corps. Care Guarantee Trust Co., New York and Paris. In France.
- MEYER, GEORGE RALPH, Captain Coast Artillery Corps, Fort Kamehameha, H. I.
- MEYER, MISS HELOISE, Lenox, Mass. Red Cross, in France.
- MITCHELL, DR. WALTER IUNGERICH, Wichita, Kans. Captain Medical Corps, Camp Funston, Kans.
- MURIE, OLAUS JOHAN, Moorhead, Minn. Cadet Army Balloon School, Fort Omaha, Nebr.
- NOBLE, GLADWYN KINGSLEY, Cambridge, Mass. Ensign U. S. Navy.
- OLDYS, HENRY, Silver Spring, Md. Asst. Auditor War Dept., in France.
- OVERTON, DR. FRANK, Patchogue, N. Y. Major Medical Corps, Camp Upton, N. Y.
- PALMER, R. H., Pocatello, Idaho. Reserve Officers Training Corps, No. 9, Presidio, Calif. (Nov. 1917).
- PANGBURN, CLIFFORD HAYES, New Haven, Conn. Formerly Acting Lieut. Red Cross in France.
- PEPPER, DR. WILLIAM, Philadelphia, Pa. Lieut. Col. Medical Reserve Corps, Philadelphia, Pa.
- PETERS, JAMES LEE, Harvard, Mass. 2d Lieut. Quartermaster's Corps, Am. Exped. Forces, in France.
- PHILLIPS, DR. JOHN CHARLES, Wenham, Mass. Medical Corps, Fort Benjamin Harrison, Indianapolis, Ind. (Dec. 1917).
- POOLE, EARL L., Reading, Pa. Private Signal Corps, Advance Supply Depot No. 1, A. P. O. 712, Am. Exped. Forces, in France.
- ROBINSON, WIRT. Colonel, U. S. Military Academy, West Point, N. Y.
- ROGERS, CHARLES HENRY, New York City. Sergeant Co. B, 31st Machine Gun Battalion, 11th Division, Camp Meade, Md.
- SANBORN, COLIN CAMPBELL, Evanston, Ill. Battery C, 149th Artillery, Am. Exped. Forces, in France.
- SCHAEFER, OSCAR FREDERICK, Geneva, N. Y. 10th Engineers (Forest), Am. Exped. Forces, in France.
- SHELTON, ALFRED COOPER, Eugene, Ore. 2d Lieut. Sanitary Corps. 831 5th St., Santa Rosa, Calif.
- SHUFFELDT, DR. ROBERT WILSON, Washington, D. C. Major Medical Corps, Army Medical Museum, Washington, D. C.
- SMITH, LESTER WHEADON, Meriden, Conn. First Class Seaman, Naval Reserve, in France.
- STIMSON, DR. ARTHUR M., Washington, D. C. Sanitary Officer, 2d Naval District, War College, Newport, R. I.
- STODDARD, HERBERT LEE, Chicago, Ill. Am. Exped. Forces, in France.

- STORER, TRACY IRWIN, Berkeley, Calif. First Lieut. Sanitary Corps, Laboratory Car 'Metchnikoff,' Fort Sam Houston, Texas.
- SWEENEY, JOSEPH A., Halsey, Nebr. Private Co. E, 2d Battalion, 20th Engineers (Forest), Am. Exped. Forces, in France.
- TYLER, DR. WINSOR M., Lexington, Mass. Captain Medical Reserve Corps, Fort Adams, Newport, R. I.
- WILCOX THOMAS FERDINAND, New York City. Capt. in Air Service, New York City.
- WOOD, DR. CASEY ALBERT, Chicago, Ill. Lieut., Medical Corps, 7 West Madison St., Chicago, Ill.
- WOOD, GEORGE B., Philadelphia, Pa. Am. Exped. Forces, in France.
- YOUNG, JOHN PAUL, Youngstown, O. Captain, 5th Co., Coast Artillery Corps, Fort Hancock, Sandy Hook, N. J.
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JUST as we go to press comes the sad news of the death, on January 6, 1919, of Theodore Roosevelt. So prominently and continuously has he figured in the history of our Country during his active life, and so great have been his services to humanity, that his attainments as a naturalist have been completely overshadowed. Only a few have appreciated the breadth of his knowledge in the field of science or realized that he had there established a lasting reputation wholly independent of his greater fame.

A member of the Nuttall Ornithological Club, during his college days at Cambridge, and an Associate of the American Ornithologists' Union from 1888 to 1902, he was, throughout his life, an active and accurate student of birds. As a hunter he was not content with the mere accumulation of trophies or specimens but invariably obtained valuable and original information on the habits of the animals, and his numerous contributions to ornithology and mammalogy will stand for all time as works of reference.

On certain special subjects, such as animal coloration, he was an authority and his intimate knowledge of the literature and the extent of his personal observations were a revelation to those who were privileged to discuss them with him.

In the United States National Museum and the American Museum of Natural History his name will be forever perpetuated in connection with the great African and South American collections which he was largely instrumental in securing.

Those who were in a position to judge this side of the man will realize that it was only the eminence of Roosevelt the statesman and the constant call to public service, that obscured the reputation and checked the further development of Roosevelt the naturalist.

